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ABSTRACT

This report examines urban student achievement using the SAT-9, the most commonly used standardized assessment among the major cities. The study, conducted in collaboration with the test's creator, Harcourt Educational Measurement, highlights student achievement in Great City Schools (GCS) and describes how urban students perform on traditional standardized tests. It provides a way for urban school districts to compare outcomes and is the first step of a longitudinal analysis of urban student progress. It examines the achievement of 760,000 urban test-takers in grades 2-11 on reading, language, mathematics, problem solving, and science subtests. SAT-9 data are disaggregated by race/ethnicity, gender, and poverty. Test-takers in this sample are very different from test-takers nationally. Six out of ten test-takers were African American or Hispanic in the GCS while in the national sample, six out of ten were White. Furthermore, two-thirds eligible for free lunch in the GCS sample, in contract to one-third nationally. Overall, GCS mean normal curve equivalents (NCEs) were well within the average range. White GCS test-takers outperformed all other urban test-takers and scored higher than the national NCE mean (indicating that urban schools educate students to take the high standards in some circumstances). The achievement gap by race was no worse in the GCS than it was nationally. There was no evidence to support the theory that academic achievement gets worse the longer students remain in school. Achievement gaps between White and non-White urban test-takers were significant. The greater the concentration of poverty in the school district, the lower the student achievement. Document contains 4 tables and 28 figures. Appendices include the following: (1) performance levels for GCS and the Nation. Grades 2-11; (2) Normal Curve Equivalents; (3) Performance Levels; and (4) CGCS Districts tested. (SM)

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Striving for Excellence

A Report on Stanford Achievement Test Results in the Great City Schools

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A Report on Stanford Achievement Test Results in the Great City Schools

Council of the Great City Schools
and
Harcourt Educational Measurement

March 2001

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Caroline Eisner, Editor, Education Consultant

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Executive Summary

Striving for Excellence: A Report on Stanford Achievement Test Results in the Great City Schools is a comprehensive examination of student achievement in urban school districts using the SAT-9. The Council of the Great City Schools (CGCS) conducted this study in collaboration with Harcourt Educational Measurement.

This study was conducted to provide 1) a snapshot of student achievement in the nation's urban schools, 2) an account of how urban students perform on a traditional standardized test, 3) a way for urban districts to compare themselves, and 4) the first step of a longitudinal analysis of urban student progress.

Striving for Excellence examines the achievement of over 760,000 urban test-takers in grades 2 through 11 on eight subtests – Total Reading, Reading Vocabulary, Reading Comprehension, Language, Total Math, Problem Solving, Math Procedures, and Science. SAT-9 data in this report were disaggregated by race/ethnicity, gender, and poverty.

It is important to note that the demographic composition of test-takers in the Great City Schools (GCS) is very different from test-takers nationally. Approximately six out of ten test-takers in the national sample were White, while six out of ten test-takers in the GCS were African American or Hispanic. In addition, about two-thirds of students in the GCS were eligible for a free lunch, compared with about one-third nationally.

The report presents the data in two ways: by NCE and by performance level. Both ways are used to present data by grade (2-11) and by subtest. Only grades 4, 8, and 10 are used to report racial, gender, and poverty data. Selected grades were used in order to simplify and shorten the report.

There was encouraging news in a number of areas. First, mean NCEs in the GCS hovered around 42 and 45, scores well within the average range. Second, White test-takers in the GCS not only outperformed all other urban test-takers but also scored higher than the national NCE mean, which is 50. This finding is consistent with other Council research. The organization's examination of ACT assessment data, for instance, showed that White students in the GCS outscored all other test-takers nationally. The finding indicates that urban schools can and do educate students to the high standards in some circumstances.

Third, there is evidence in the report that the achievement gap by race is no worse in the GCS than it is nationally. Finally, there was no evidence among the students in this study that academic achievement gets worse the longer they remain in school.

The discouraging news is that achievement gaps between White and non-White urban test-takers are significant. Overall, reading scores were lower than math scores and achievement gaps between White and non-White students were wider for reading than for math. African American students scored lower than White students, and Hispanic students scored lower than African American students. Achievement gaps between White and Hispanic students were wider than achievement gaps between White and African American students.

The results were also predictable with respect to the effects of poverty on student performance. The greater the concentration of poverty in the school district, the lower the student achievement. Urban students in high poverty districts were more likely to perform below the basic level than students attending schools in districts with moderate concentrations of poverty.

This report also allows one to see similarities and differences between results reported by NCE and by performance level. NCE results cluster more around the mean while performance data show more variation. The percentage of test-takers in the GCS, for instance, scoring below the basic level ranged from 31 to 77 percent. The percentage of test-takers nationally scoring below the basic level ranged from 26 to 75 percent.

There were nearly 800,000 test-takers in the GCS included in these analyses. These students come from a relatively small number of urban school districts. Caution should be exercised accordingly when reading this report and examining its findings and conclusions.

Striving for Excellence does not contain many surprises, but it does provide an objective examination of student achievement in the nation's urban schools using comparable data. While *Striving for Excellence* highlights what we already know about the correlation of race/ethnicity and poverty to student achievement, the data provide a baseline for improvement. This report is a part of a series of studies that will track improvements by urban districts as they work to increase overall student achievement and eliminate achievement gaps.

I. Introduction and Data Analyses

Striving for Excellence: A Report on Stanford Achievement Test Results in the Great City Schools is an extensive examination of urban student performance on the SAT-9, the most commonly used standardized assessment among the major cities. The Council of the Great City Schools and Harcourt Educational Measurement conducted this study as a baseline from which to measure future urban school progress.

Staff from the Council of the Great City Schools and Harcourt Educational Measurement began discussing the components of this study in October 1999. Harcourt Educational Measurement provided the assessment data and the Council conducted the analyses. The Council and Harcourt edited and approved the final version of the report.

Assessment data were analyzed for each Council district that administered the SAT-9 during the 1998-1999 school year and for which scoring services were provided by Harcourt Educational Measurement.[1] Council districts that administered the SAT-9 during the 1998-1999 school year but did **not** use Harcourt Measurement to score the results were not included in this analysis. Discussion about how to include these additional districts in the future is ongoing.

Council districts' test scores were reported in terms of normal curve equivalents (NCEs) and performance levels.[2] Both metrics were disaggregated according to the following variables:

- SAT-9 subtests: Total Reading, Reading Comprehension, Reading Vocabulary, Total Math, Problem Solving, Math Procedures, Language, and Science
- Student race/ethnicity
- Student gender
- Concentrations of school district poverty

Because students do not provide information about their socio-economic status on test documents, CGCS school districts were categorized according to their percentages of students enrolled in free lunch programs. These data enabled an analysis of student achievement by concentrations of poverty.

[1]All districts included in the analyses tested in the spring of 1999 except the District of Columbia Public Schools and Ft. Worth Independent School District which tested in the fall of 1998.
[2]For a complete description of NCEs and performance levels see Appendices B and C, respectively.

II. Summary of Findings

A. Characteristics of GCS Test-Takers and Test-Takers Nationally

- Some 16 GCS districts administered the SAT-9 to 760,258 students in 1998-99. More GCS students (105,468) were tested in grade 3 than any other grade; the fewest number of students (46,278) were tested in grade 11. (Tables 1 and 2)

- Approximately 22.5% of GCS test-takers were African American, compared with 16.9% of the students on which the SAT-9 was standardized. About 38.9% of GCS test-takers were Hispanic, compared with the 9.6% of the students on which the SAT-9 was standardized. Approximately 16.8% of GCS test-takers were White, compared with 63.2% of the students on which the test was standardized. (Table 1)

- GCS districts included in this study tested more Hispanic students than any other racial/ethnic group and fewer American Indians than any other group.[3] (Table 2)

- Approximately 94,000 students were tested in grade 4; 72,000 students were tested in grade 8; and 59,000 students in grade 10—in the 12 GCS districts in this study that tested in these grades. (Table 2)

- GCS districts tested more students in Reading Comprehension and Mathematics than in Language and Science. (Table 3)

- GCS districts tested students in Total Reading,[4] Reading Vocabulary, Reading Comprehension, Language, and Total Math in grades 2-11. GCS students were tested in Science in grades 3–11. Students were tested in Problem Solving and Math Procedures in grades 2-9. (Table 3)

- Hispanic, African American and White students in grade 4 comprised 40%, 20%, and 14%, respectively, of all GCS test-takers in Total Math and Reading Comprehension. (Figure 1)

- Hispanic, African American, and White students in grades 8 and 10 comprised approximately 33%, 20%, 17%, respectively, of all GCS test-takers in Total Math[5] and Reading Comprehension. (Figure 1)

[3]American Indians were not included in further data analyses in this report due to an insufficient number of test-takers.
[4]Total Reading is a combination of Reading Vocabulary and Reading Comprehension.
[5]Total Math is a combinanon of Problem Solving and Math Procedures in grades 2-9. SAT-9 administers only one Math subtest in grades 10 and 11.

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Table 1: Demographic Characteristics by U.S. School Enrollment, Students Participating in the SAT-9 Standardization Program, and GCS SAT-9 Test-Takers

	1995-1996 School Enrollment Percentage of Total U.S.*	Percentage of Students in Spring 1995 Standardization Programs**	Percentage of 1998-1999 GCS Test-Takers
Ethnicity			
African American	16.9	16.9	22.5
Hispanic	14.1	9.6	38.9
White	65.5	63.2	16.8
Other	3.5	10.1	21.8***
Total # of Students	**44,840,000**	**250,000**	**760,258**

*National Center for Education Statistics, United States Department of Education, 1997-98.

**Harcourt Brace Educational Measurement, SAT-9 Technical Data Report, 1997.

***GCS figure includes students whose ethnicities were reported as "unknown".

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Table 2: GCS Test-Takers by Ethnicity
Grades 2 – 11

	Second Grade		Third Grade		Fourth Grade	
Race/Ethnicity	Students	Percent	Students	Percent	Students	Percent
Asian	4,904	5.4%	5,340	5.1%	4,691	5.0%
African American	17,014	18.6%	20,154	19.1%	19,028	20.1%
Hispanic	43,729	47.7%	44,423	42.1%	37,841	40.0%
American Indian	327	0.4%	466	0.4%	434	0.5%
White	13,820	15.1%	14,375	13.6%	13,322	14.1%
Unknown	11,854	12.9%	20,710	19.6%	19,302	20.4%
TOTAL	91,648	100.0%	105,468	100.0%	94,618	100.0%

	Fifth Grade		Sixth Grade		Seventh Grade	
Race/Ethnicity	Students	Percent	Students	Percent	Students	Percent
Asian	4,162	5.4%	3,587	5.3%	3,696	4.8%
African American	20,353	26.3%	18,854	28.0%	16,054	21.0%
Hispanic	34,242	44.3%	27,548	41.0%	26,645	34.8%
American Indian	459	0.6%	479	0.7%	418	0.5%
White	13,772	17.8%	12,695	18.9%	12,395	16.2%
Unknown	4,324	5.6%	4,056	6.0%	17,292	22.6%
TOTAL	77,312	100.0%	67,219	100.0%	76,500	100.0%

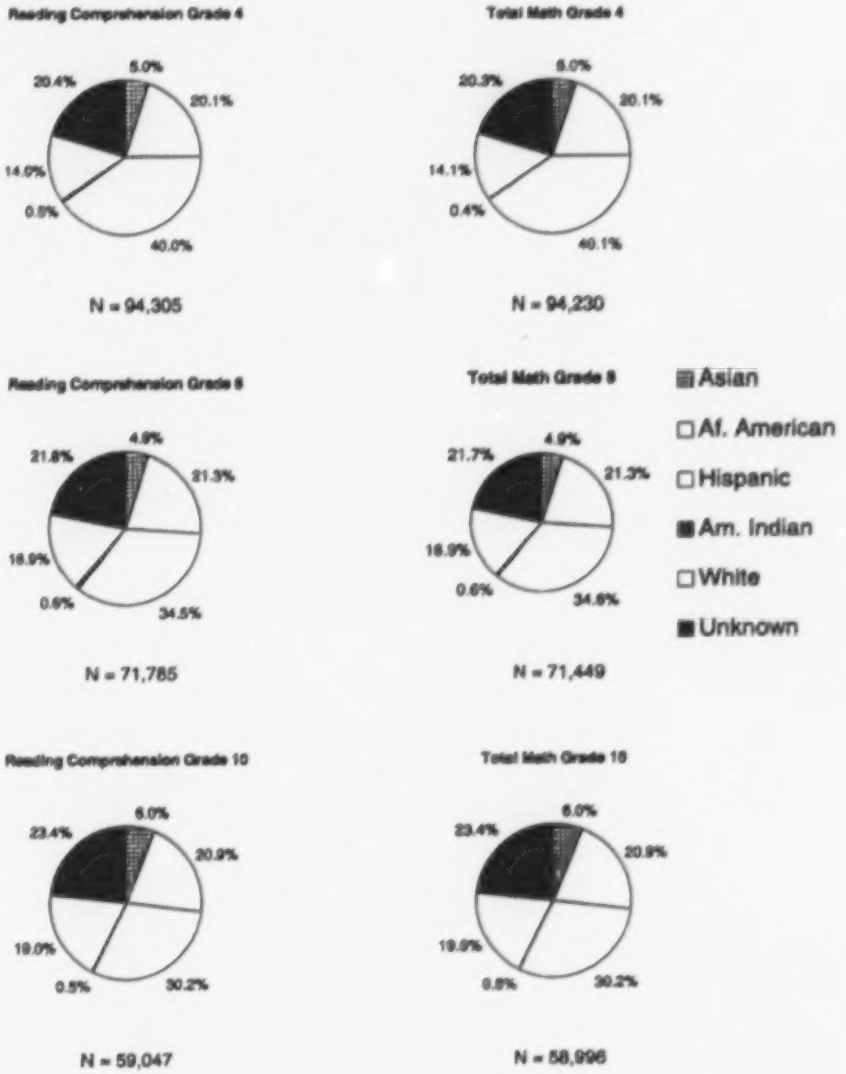
	Eighth Grade		Ninth Grade		Tenth Grade		Eleventh Grade	
Race/Ethnicity	Students	Percent	Students	Percent	Students	Percent	Students	Percent
Asian	3,499	4.8%	3,933	5.7%	3,558	6.0%	2,918	6.3%
African American	15,387	21.3%	21,609	31.2%	12,517	20.9%	9,962	21.5%
Hispanic	24,924	34.5%	25,771	37.3%	18,033	30.2%	12,310	26.6%
American Indian	460	0.6%	407	0.6%	303	0.5%	254	0.5%
White	12,227	16.9%	13,842	20.0%	11,312	18.9%	9,637	20.8%
Unknown	15,769	21.8%	3,605	5.2%	14,059	23.5%	11,197	24.2%
TOTAL	72,266	100.0%	69,167	100.0%	59,782	100.0%	46,278	100.0%

Table 3: Number of GCS Districts and Test-Takers
All Subtests, Grades 2 – 11

Subtest	Description	Second	Third	Fourth	Fifth	Sixth
Total Reading	Students	90,348	90,070	79,995	76,759	66,593
	Districts	11	11	11	12	12
Reading Vocab	Students	90,765	90,143	80,054	76,817	66,699
	Districts	11	11	11	12	12
Reading Comp	Students	91,354	105,167	94,305	77,070	66,890
	Districts	11	12	12	12	12
Total Math	Students	85,604	105,001	94,230	77,009	66,706
	Districts	10	12	12	12	12
Problem Solving	Students	85,758	105,195	94,402	77,141	66,852
	Districts	10	12	12	12	12
Math Procedures	Students	85,670	105,108	94,328	77,088	66,847
	Districts	10	12	12	12	12
Language	Students	74,669	82,852	74,249	72,148	61,708
	Districts	8	10	10	11	11
Science	Students	-	74,347	68,124	50,025	44,502
	Districts	-	5	9	10	10

Subtest	Description	Seventh	Eighth	Ninth	Tenth	Eleventh
Total Reading	Students	62,746	59,710	67,720	48,263	37,045
	Districts	11	11	12	11	11
Reading Vocab	Students	62,930	59,843	61,894	48,395	37,153
	Districts	11	11	12	11	11
Reading Comp	Students	75,961	71,785	68,736	59,047	45,717
	Districts	12	12	12	12	12
Total Math	Students	75,575	71,449	68,141	58,996	45,697
	Districts	12	12	12	12	12
Problem Solving	Students	75,895	71,767	6,904	-	-
	Districts	12	12	2	-	-
Math Procedures	Students	75,833	71,647	6,848	-	-
	Districts	12	12	2	-	-
Language	Students	57,702	54,905	62,983	43,937	33,852
	Districts	10	10	11	10	10
Science	Students	56,614	54,277	51,948	49,969	38,871
	Districts	10	10	10	10	10

Figure 1: GCS Test-Takers by Ethnicity
Reading Comprehension and Total Math*
Grades 4, 8, and 10



*Total Math is a combination of Math Procedures and Math Problem Solving at grades 4 and 8. Grade 10 only has one math subtest, which is entitled Math. All chart titles use the term "Total Math" to refer to both types of math subtests for grades 4, 8, and 10.

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B. Mean NCEs for GCS Test-Takers

- Average NCEs in the GCS were higher in Total Math than in Total Reading. (Table 4)
- Average NCEs in the GCS were higher in Language than in Reading Comprehension. (Table 4)
- The highest average Total Reading NCEs were in grades 8 and 11. (Table 4)
- The highest average Reading Vocabulary, Language, and Total Math NCEs were in grade 11. (Table 4)
- The highest average Reading Comprehension and Science NCEs were in grade 8. (Table 4)
- The highest average Problem Solving NCEs were in grade 6 and the highest average Math Procedures NCEs were in grade 2. (Table 4)
- The lowest average Total Reading, Reading Comprehension, and Language NCEs were in grade 10. (Table 4)
- The lowest average Reading Vocabulary and Total Math NCEs were in grade 7. (Table 4)
- The lowest average Problem Solving and Science NCEs were in grade 5. (Table 4)
- The lowest average Math Procedures NCEs were in grade 9. (Table 4)

Table 4: GCS Mean NCEs
All Subtests
Grades 2 – 11

Grade	Total Reading	Reading Vocab	Reading Comp	Language
Second	41.7	40.2	43.5	41.8
Third	39.4	39.4	41.2	43.0
Fourth	39.9	38.7	41.6	44.1
Fifth	40.0	40.5	41.0	42.4
Sixth	41.4	43.0	41.6	43.4
Seventh	39.8	37.4	42.0	44.4
Eighth	42.4	41.3	43.9	44.5
Ninth	38.4	39.3	40.0	44.4
Tenth	37.9	43.1	36.8	41.7
Eleventh	42.4	47.1	40.4	46.7

Grade	Total Math	Problem Solving	Math Procedures	Science
Second	45.8	44.8	49.3	n/a
Third	45.0	44.4	47.2	41.9
Fourth	42.8	43.3	44.1	39.5
Fifth	43.1	43.2	44.0	38.0
Sixth	45.2	47.2	43.6	42.8
Seventh	42.5	43.3	42.5	43.6
Eighth	43.2	44.7	40.9	44.4
Ninth	45.7	44.2	39.5	42.1
Tenth	43.9	n/a	n/a	43.0
Eleventh	46.4	n/a	n/a	44.3

C. Mean NCEs by Ethnicity

- White students in the GCS scored higher in Reading Comprehension and Total Math in grades 4, 8, and 10 than any other ethnic group in the cities and higher than the national norm (NCE 50.0). (Figure 2)
- Asian American students in the GCS were the second highest scoring ethnic group in Reading Comprehension and Total Math in grades 4, 8, and 10. (Figure 2)
- African American students scored higher than Hispanic students in grades 4, 8, and 10 in Reading Comprehension and Total Math. (Figure 2)
- Gaps between White and African American students were greatest in Reading Comprehension (19.1 NCEs) and Total Math (18.8 NCEs) in grade 8. (Figure 3)
- Gaps between White and Hispanic students were also greatest in Reading Comprehension (25.8 NCEs) and Total Math (21.2 NCEs) in grade 8. (Figure 3)
- Gaps between White and Asian American students were greatest in Reading Comprehension (17.0 NCE's) and Total Math (5.7 NCEs) in grade 8. (Figure 3)
- The largest achievement gaps were between White and Hispanic 8th grade students in Reading Comprehension. (Figure 3)
- The smallest achievement gaps were between White and Asian American 10th grade students in Total Math. (Figure 3)

Figure 2: GCS Mean NCEs by Ethnicity
Reading Comprehension and Total Math
Grades 4, 8, and 10

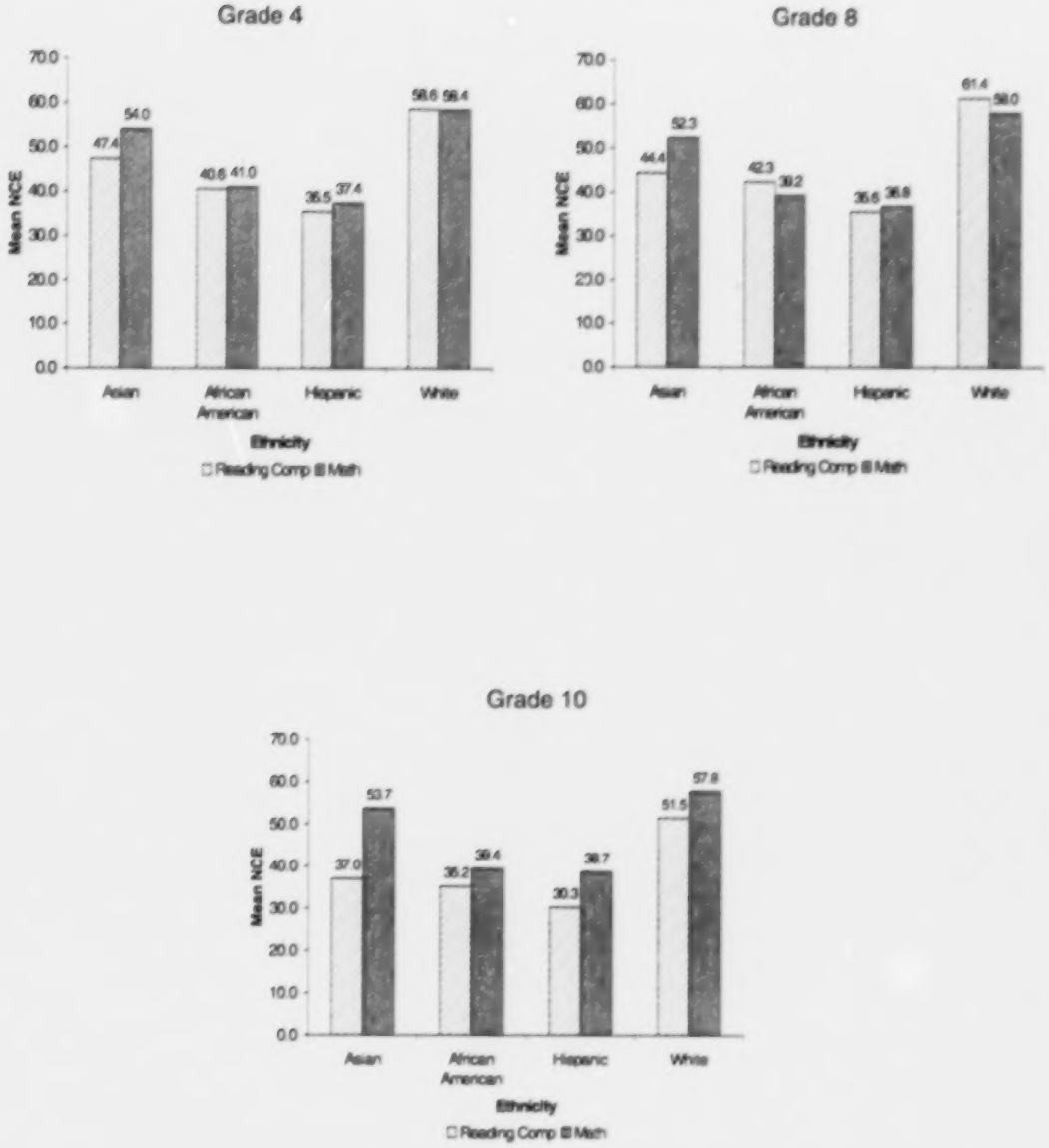
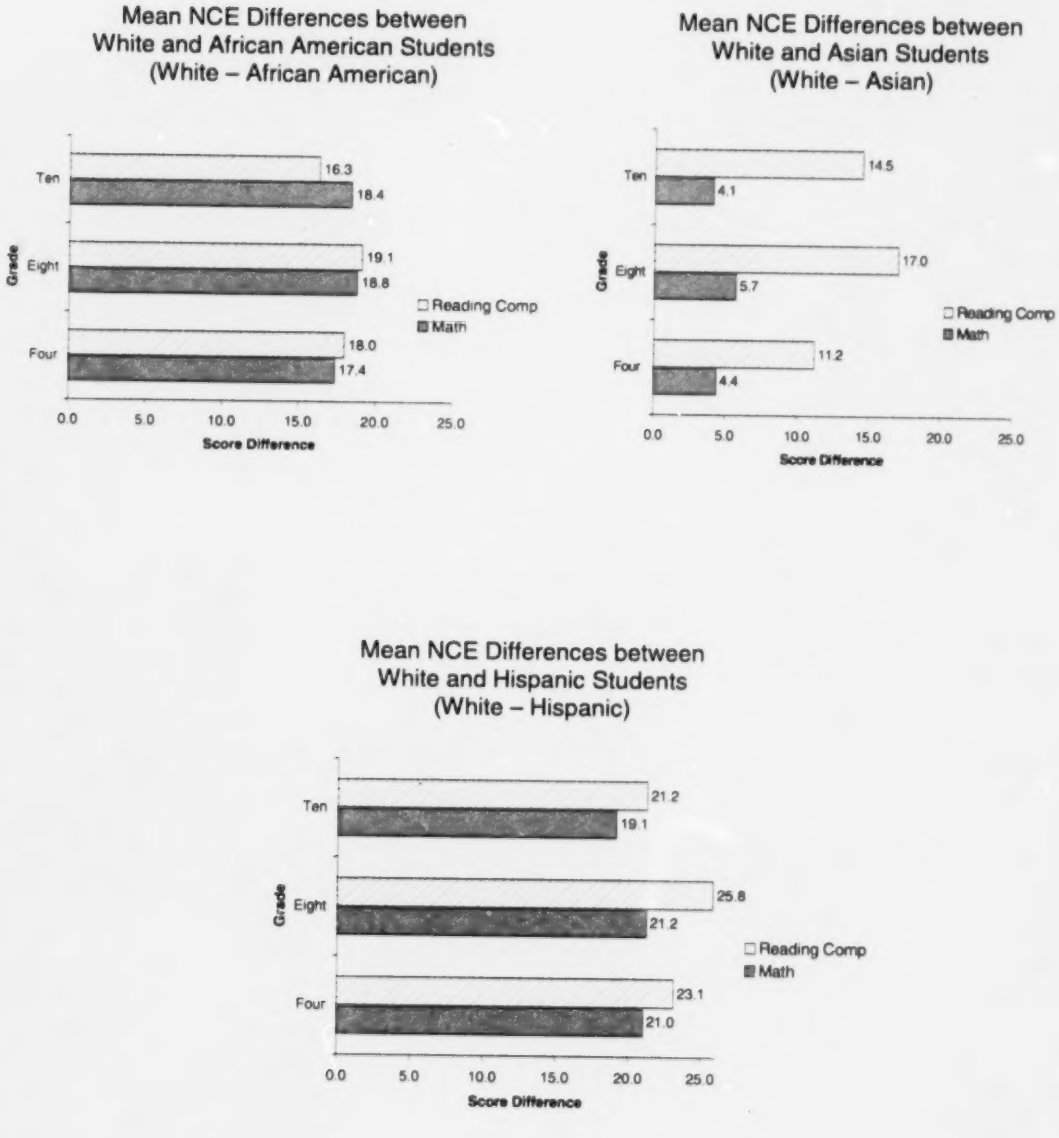


Figure 3: GCS Mean NCE Differences between Ethnic Groups Reading Comprehension and Total Math Grades 4, 8, and 10



D. Mean NCEs by Gender and Ethnicity

- Female students in the GCS scored higher in Reading Comprehension in grades 4, 8, and 10 than males by 2.7 to 4.1 NCEs. (Figure 4)
- Males and females had almost identical Total Math scores in grades 4, 8, and 10. (Figure 4)
- White males and females scored higher than the national norm in Reading Comprehension and Total Math in grades 4, 8, and 10. (Figures 5 and 6)
- Hispanic males and females scored lower than any other group in Reading Comprehension and Total Math in grades 4, 8, and 10. (Figures 5 and 6)
- African American females scored higher than African American males in Reading Comprehension and Total Math in grades 4, 8, and 10. (Figures 5 and 6)
- White males scored higher than White females in Total Math in grades 4, 8, and 10; White females scored higher than White males in Reading Comprehension in grades 4, 8, and 10. (Figures 5 and 6)

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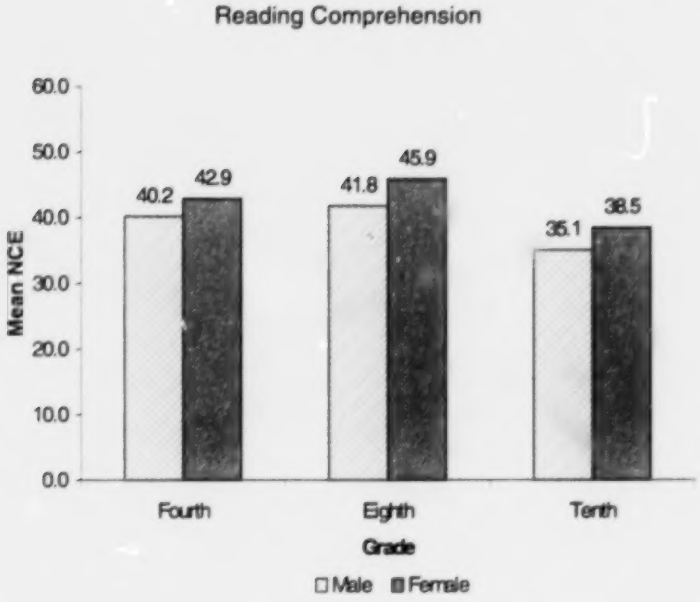
Figure 4: GCS Mean NCEs by Gender
Reading Comprehension and Total Math
Grades 4, 8, and 10



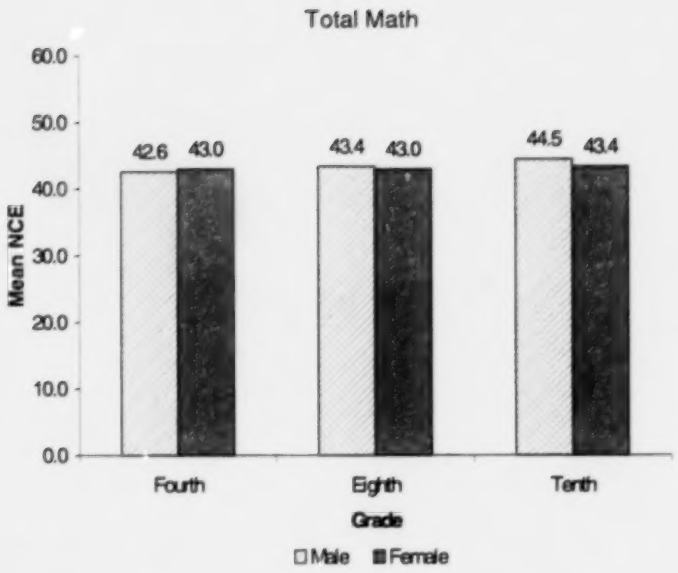
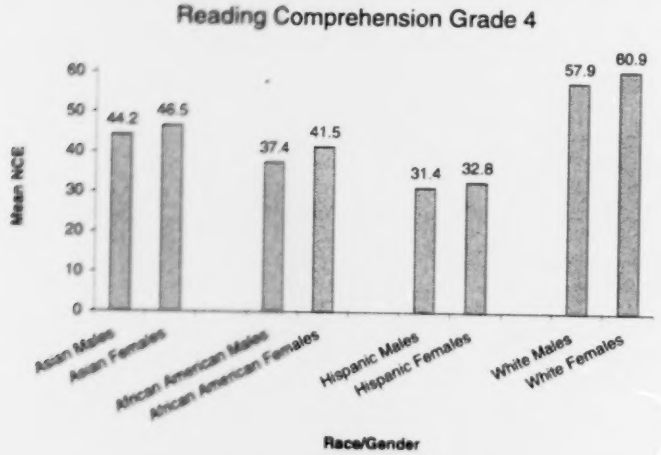
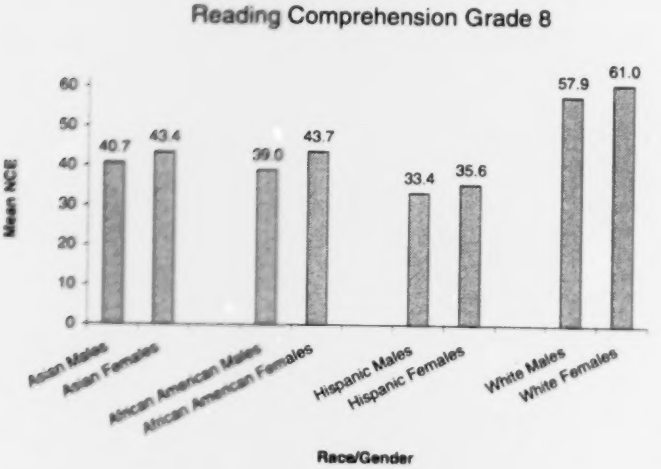


Figure 5: GCS Mean NCEs by Ethnicity and Gender Reading Comprehension, Grades 4, 8, and 10





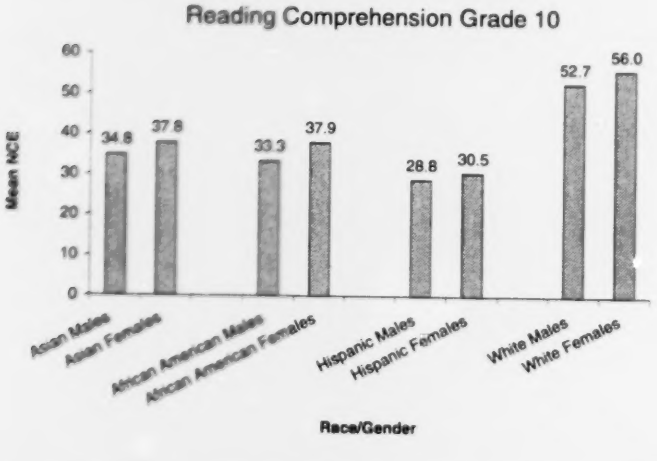
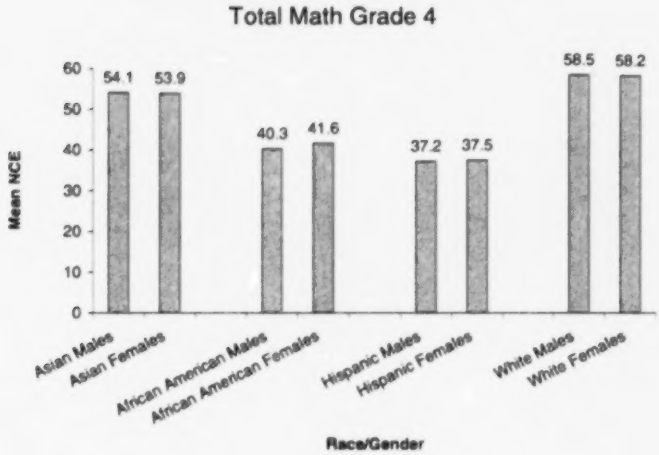
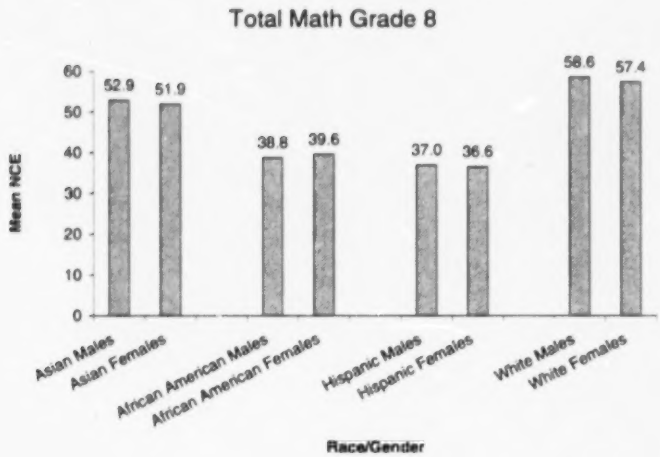
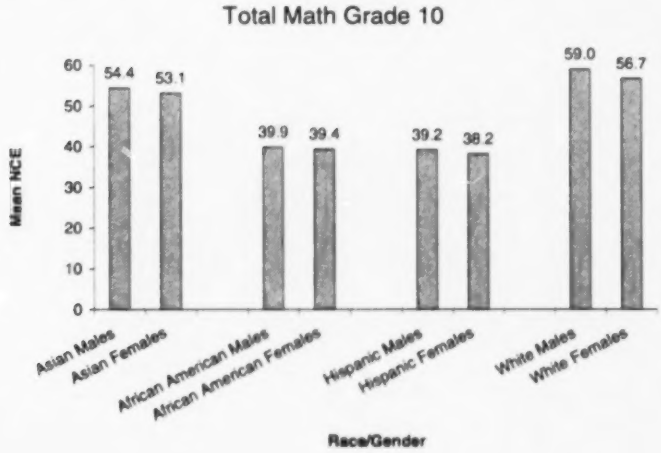


Figure 6: GCS Mean NCEs by Ethnicity and Gender
Total Math, Grades 4, 8, and 10







E. Mean NCEs and Achievement Gaps by District Poverty[6]

- GCS districts with high concentrations of poverty had lower average NCEs than districts with moderate concentrations. (Figure 7)
- GCS districts with high concentrations of poverty scored somewhat lower in Reading Comprehension than in Total Math. (Figure 7)
- Achievement gaps between districts of high and moderate concentrations of poverty were generally greatest in 4th grade in both Reading Comprehension and Total Math. (Figure 8)
- All ethnic groups in grades 4, 8, and 10 scored higher in Reading Comprehension and Total Math in districts with moderate concentrations of poverty than in districts with high concentrations. (Figure 9)
- Poverty appeared to have a greater effect on Hispanic students in both Reading Comprehension and Total Math in all grades tested than on any other ethnic group.[7] (Figure 9)

[6]Concentration of poverty was determined by the percent of students in a district eligible to receive free lunch. Districts with 34-66% of their students eligible for free lunch were identified as having a moderate concentration of poverty. Districts with 67-100% of their students eligible for free lunch were identified as having a high concentration of poverty. None of the districts in this sample had less than 34% of its students eligible for free lunch.

[7] This finding may be an artifact of the specific districts in the study.

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Figure 7: GCS Mean NCEs by Percent of District Enrollment in Free Lunch Program Reading Comprehension and Total Math Grades 4, 8, and 10

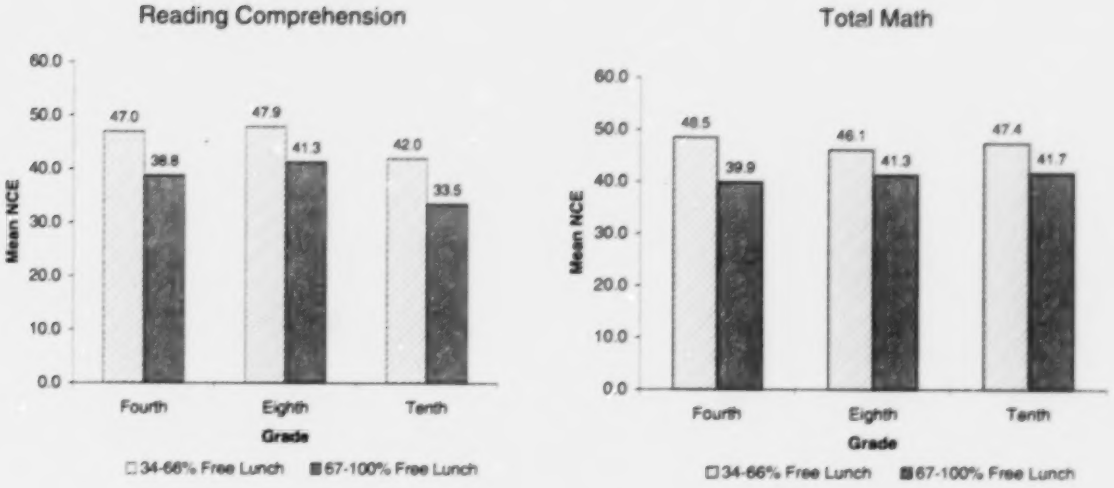


Figure 8: GCS Mean NCE Differences between Districts with 34-66% Enrollment in Free Lunch Program and Districts with 67-100% Enrollment in Free Lunch Program (34-66% Free Lunch Enrollment – 67-100% Free Lunch Enrollment)

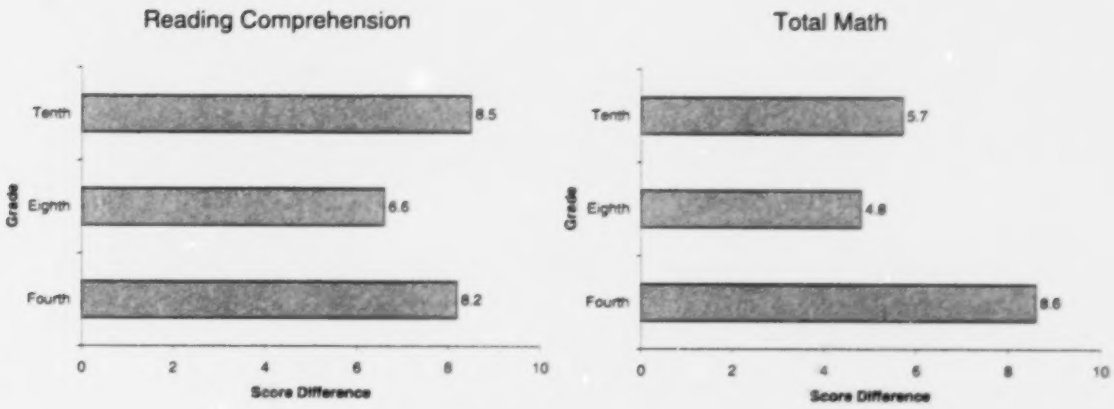
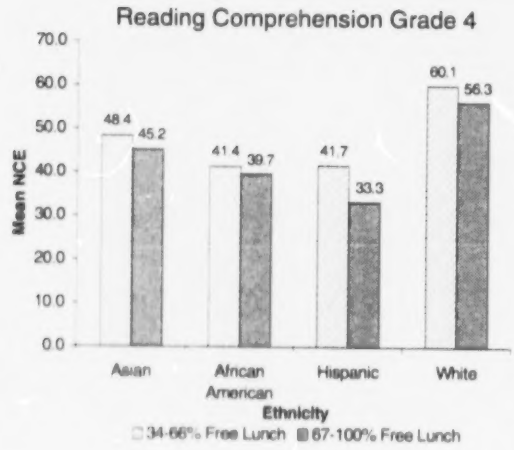
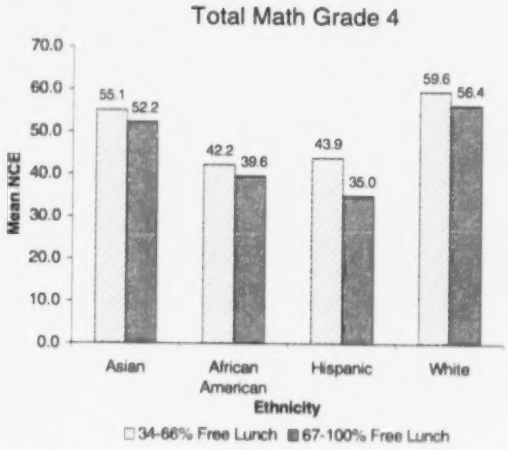
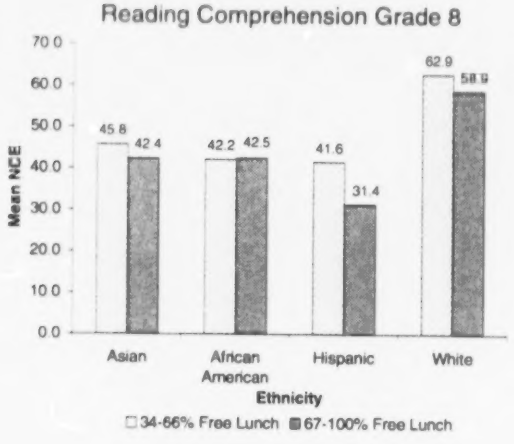
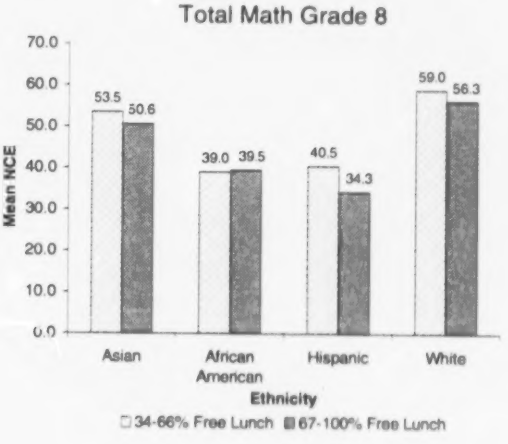


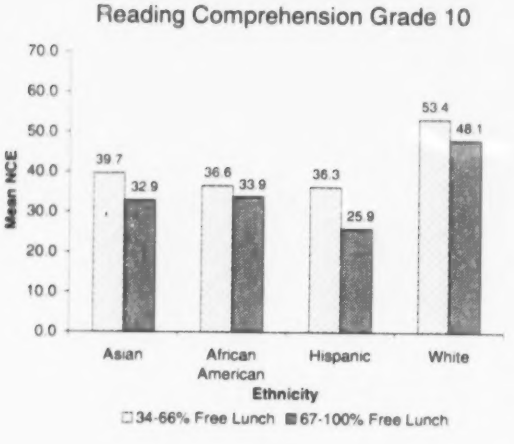
Figure 9: GCS Mean NCEs by Percent of District Enrollment in Free Lunch Program and Ethnicity Reading Comprehension and Total Math, Grades 4, 8, and 10











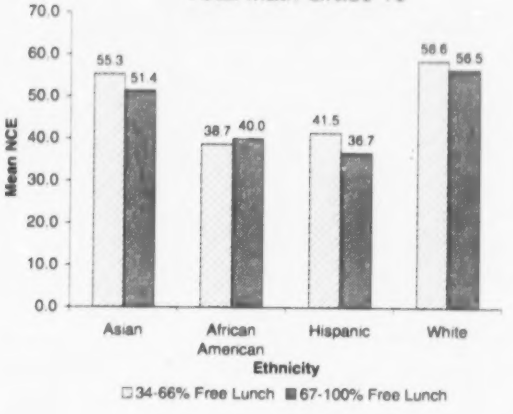


Figure 10: GCS Mean NCE Differences between White and African American Students by Percent of District Enrollment in Free Lunch Program Reading Comprehension and Total Math, Grades 4, 8, and 10 (White – African American)

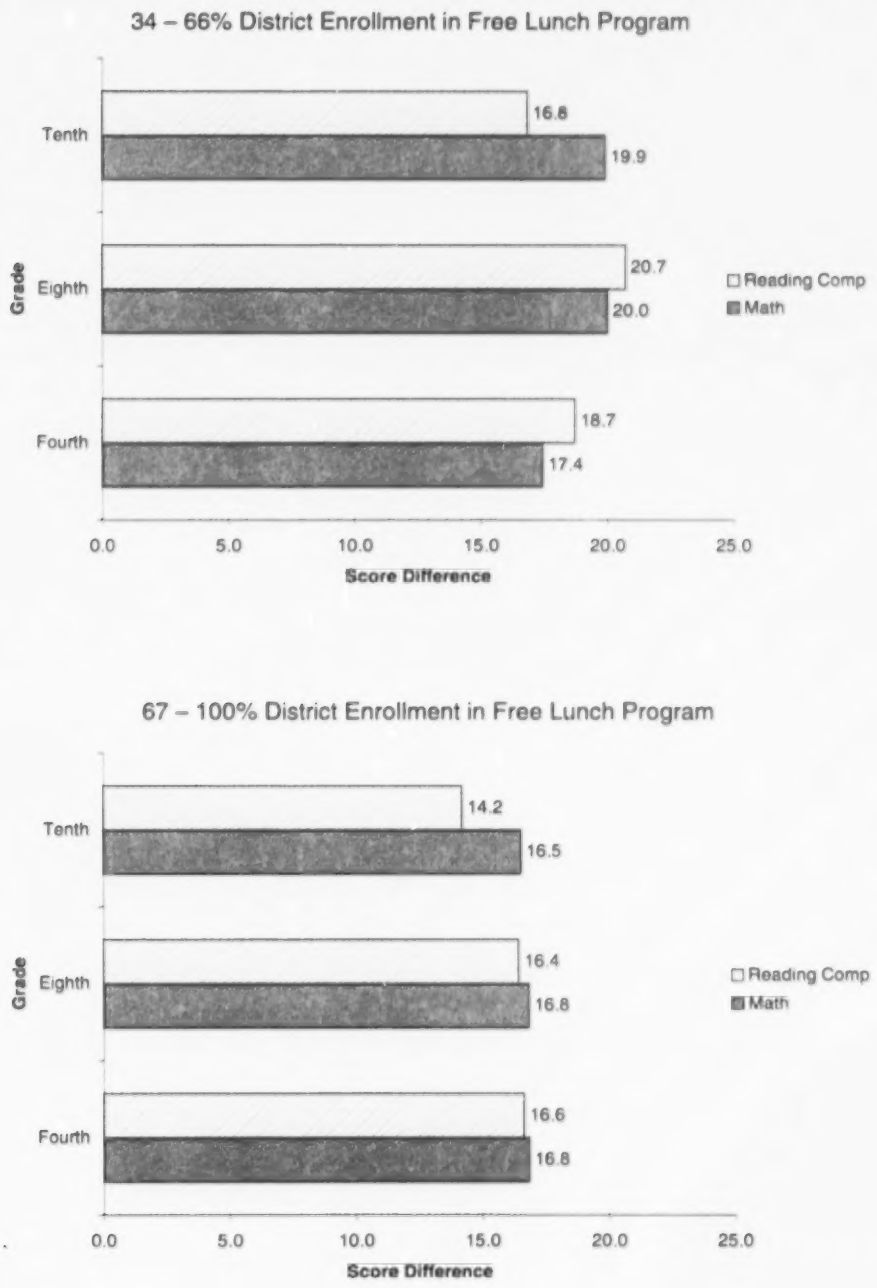
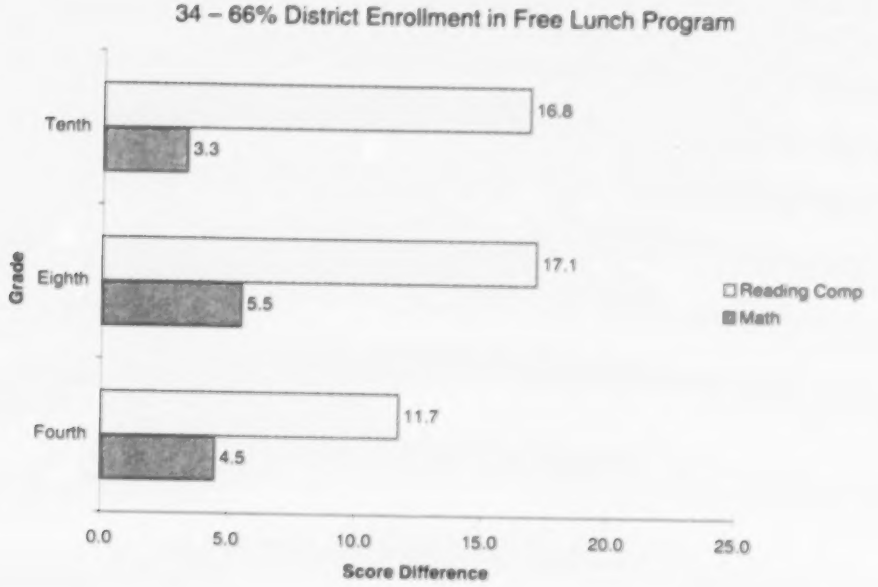


Figure 11: GCS Mean NCE Differences between White and Asian Students by Percent of District Enrollment in Free Lunch Program Reading Comprehension and Total Math, Grades 4, 8, and 10 (White – Asian)



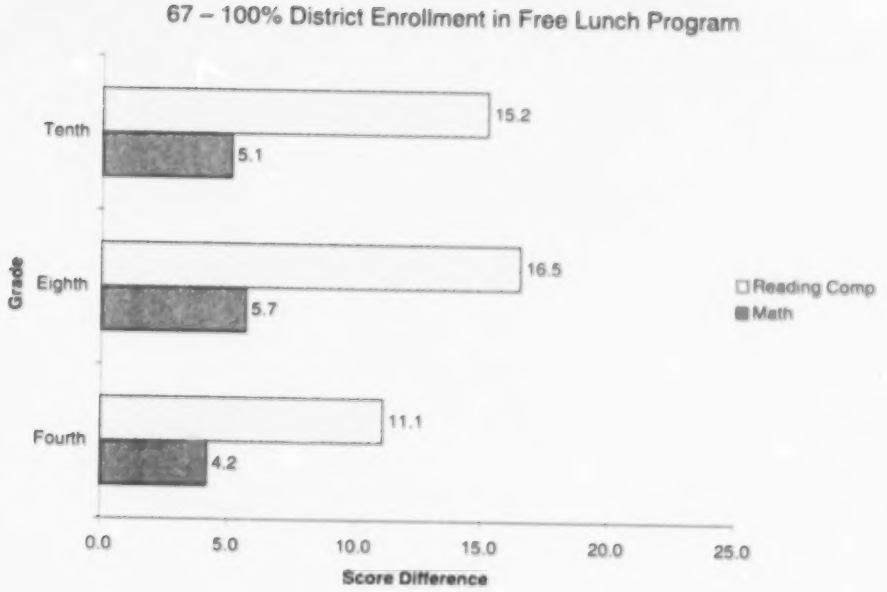
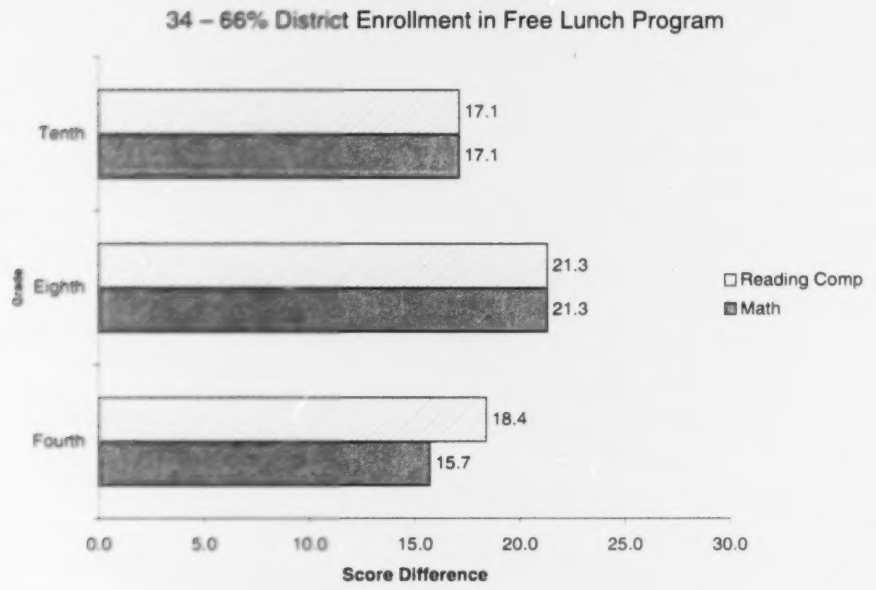
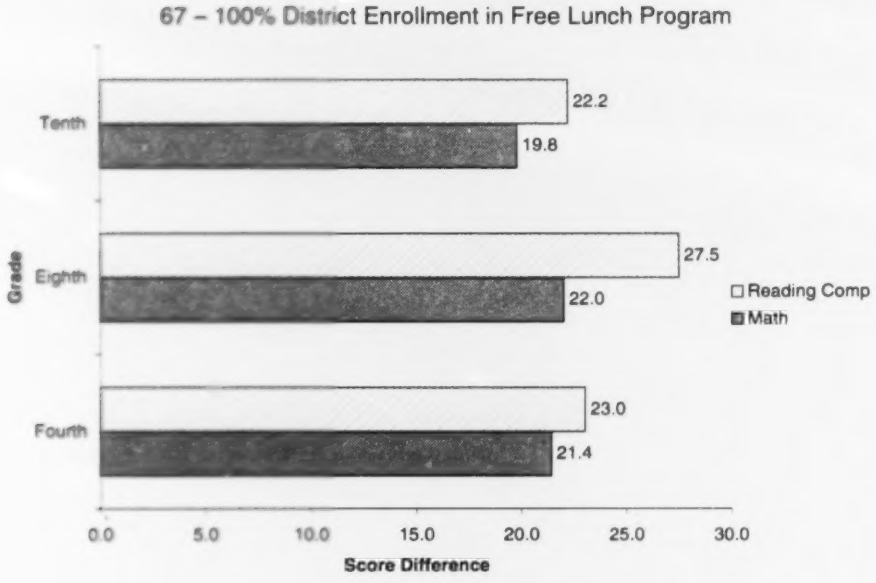


Figure 12: GCS Mean NCE Differences between White and Hispanic Students by Percent of District Enrollment in Free Lunch Program Reading Comprehension and Total Math, Grades 4, 8, and 10 (White – Hispanic)





F. GCS and National Performance Levels[8]

- Approximately 43% of GCS 4th grade students scored below the basic level (Level 1) in Reading Comprehension, compared with about 30% of 4th grade students nationally.[9] (Figure 13)
- About 63% of GCS 8th grade students scored below the basic level (Level 1) in Total Math, compared with about 42% of 8th grade students nationally. (Figure 14)
- The percentage of GCS students in all grades scoring at the basic level in Reading Comprehension (Level 2) was approximately the same as the percentage of students scoring at that level nationally. (Figure 13)
- Fewer GCS students scored at the highest two performance levels (Levels 3 and 4) in Reading Comprehension and Total Math than did students nationally. (Figures 13 and 14)
- The gap between GCS students and students nationally scoring at or above the basic level (Levels 2, 3, and 4) in Reading Comprehension ranged from five percentage points in grade 11 to 23 percentage points in grade 10. (Figure 15)
- The gap between GCS students and students nationally scoring at or above the basic level (Levels 2, 3, and 4) in Total Math ranged from two percentage points in grade 11 to 19 percentage points in grades 7 and 8. (Figure 15)

[8]Performance Levels range from 1 to 4, with Level 4 denoting the highest achievement while Level 1 is the lowest. See Appendix C for more details.
[9]Below basic is defined as Level 1. At or above basic is defined as the sum of students scoring in Levels 2, 3, and 4.

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Figure 13: GCS and National Performance Levels
Reading Comprehension, Grades 2 – 11

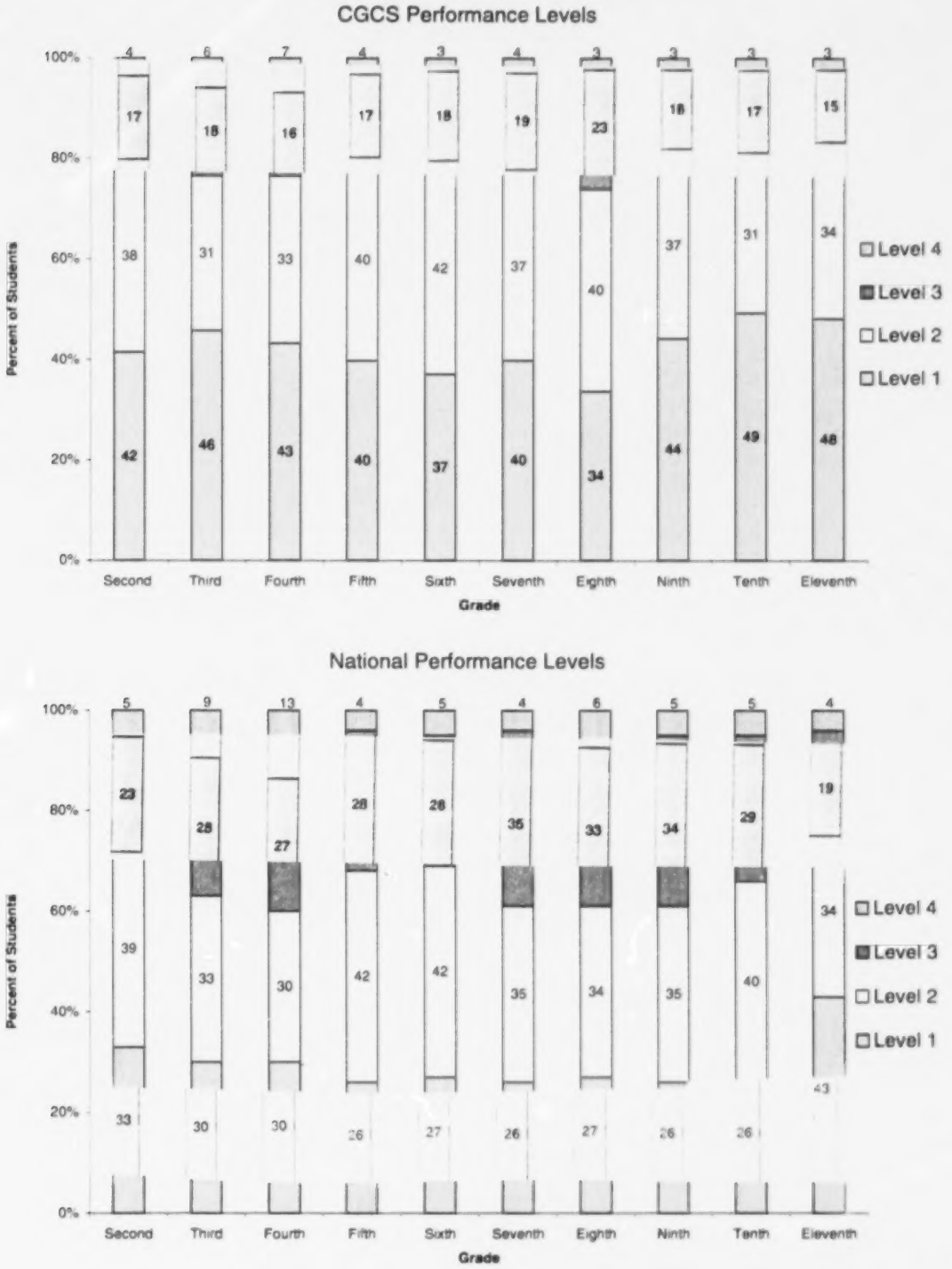

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Figure 14: GCS and National Performance Levels
Total Math, Grades 2 – 11

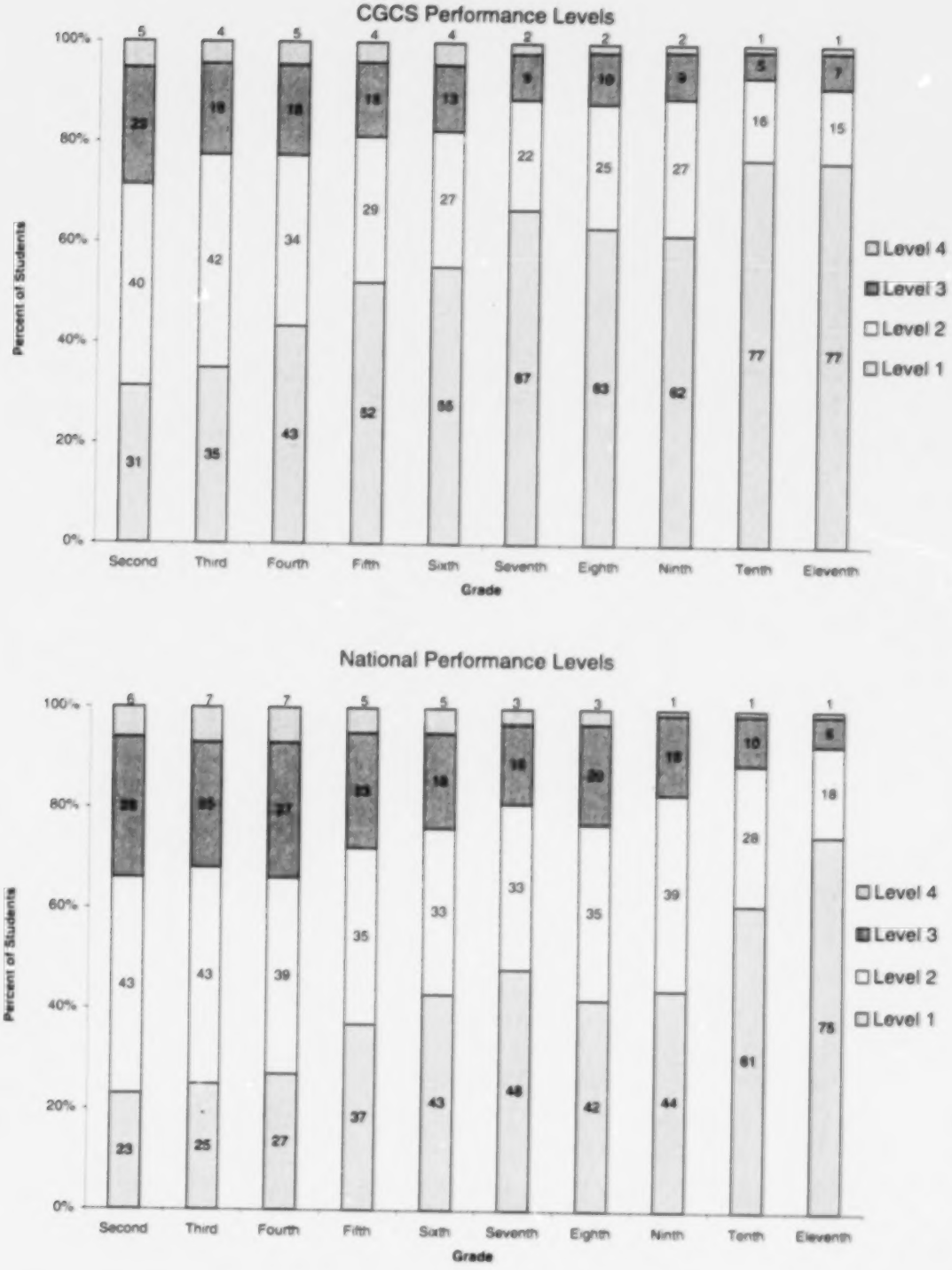

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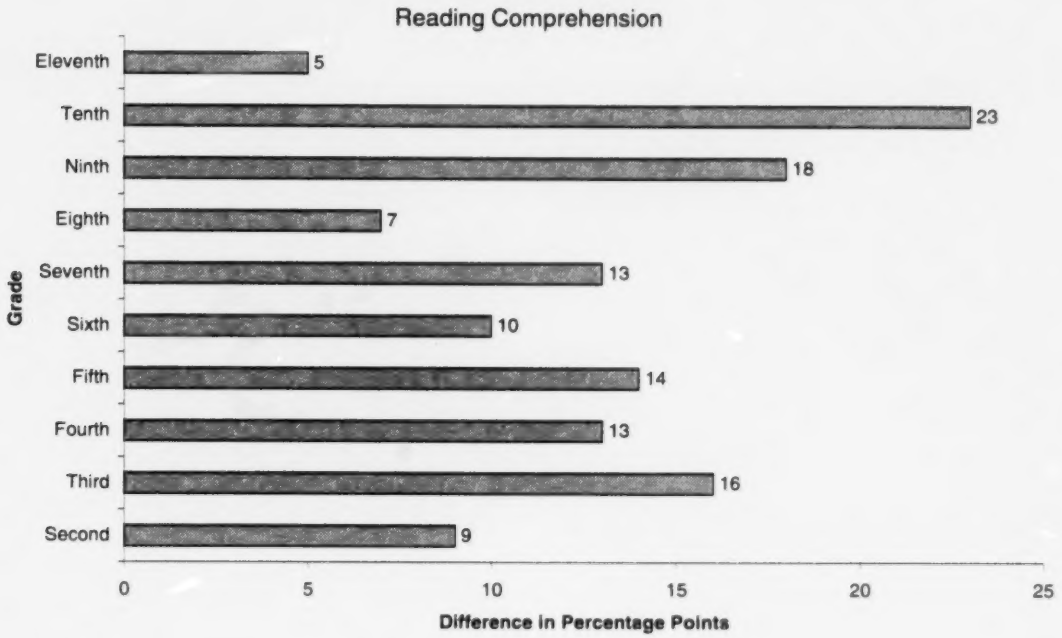
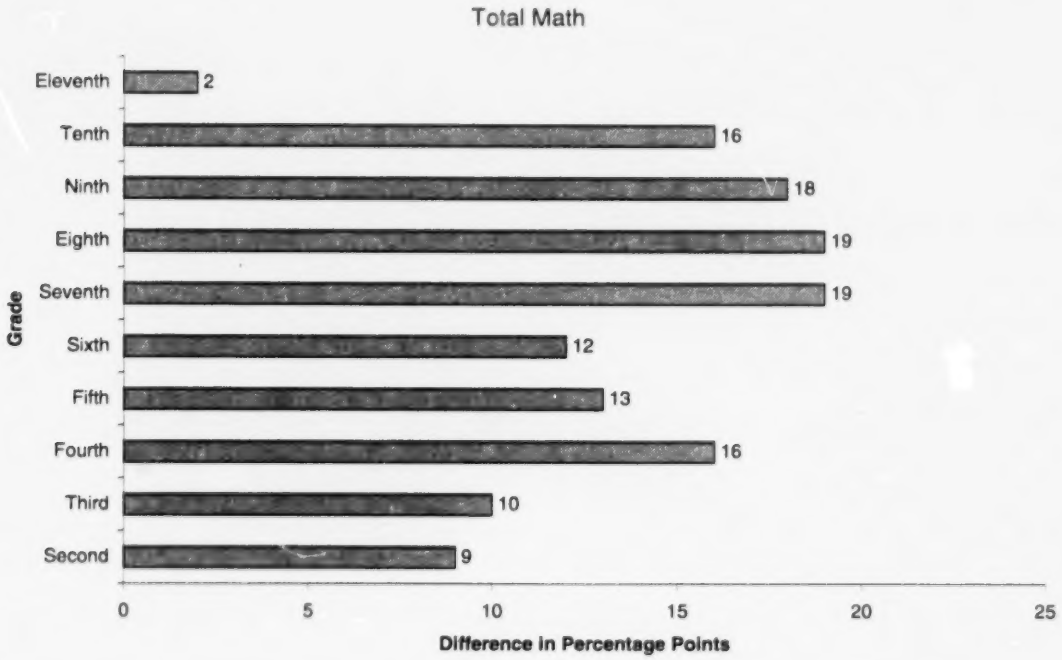
Figure 15: Difference in Percentage Points between the Nation and GCS Students Performing at or above the Basic Level (Performance Levels 2, 3 and 4) Reading Comprehension and Total Math, Grades 2 – 11 (Nation – CGCS)





G. GCS Performance Levels by Ethnicity

- GCS Hispanic students in grades 4, 8, and 10 were more likely to score below the basic level in Reading Comprehension and Total Math than any other ethnic group. (Figures 16 and 17)
- GCS White students in grades 4, 8, and 10 were less likely to score below the basic level in Reading Comprehension and Total Math than any other ethnic group. (Figures 16 and 17)
- Approximately 80% of GCS White students in grades 4 and 8 scored at or above the basic level in Reading Comprehension and Total Math, compared with about 60-70% of 4th and 8th grade students nationally (Figures 16 and 17)
- GCS African American students were most likely to score at or above the basic level in Reading Comprehension in grades 4 and 8 and in Total Math in grade 4. (Figures 16 and 17)
- The achievement gap between White and Hispanic students (at or above the basic level) in Reading Comprehension was approximately 45.1 points in the 4th grade, 43.8 points in the 8th grade, and 46.6 points in the 10th grade. (Figure 18)
- The achievement gap between White and Hispanic students (at or above the basic level) in Total Math was approximately 37.6 points in the 4th grade, 48.5 points in the 8th grade, and 38.5 points in the 10th grade. (Figure 18)
- The achievement gap between White and African American students (at or above the basic level) in Reading Comprehension was approximately 30.7 points in the 4th grade, 26.1 points in the 8th grade, and 34.2 points in the 10th grade. (Figure 18)
- The achievement gap between White and African students (at or above the basic level) in Total Math was approximately 28.3 points in the 4th grade, 41.4 points in the 8th grade, and 36.1 points in the 10th grade. (Figure 18)
- The achievement gap between White and Asian American students (at or above the basic level) in Reading Comprehension was approximately 17.5 points in the 4th grade, 28.0 points in the 8th grade, and 34.1 points in the 10th grade. (Figure 18)
- The achievement gap between White and Asian American students (at or above the basic level) in Total Math was approximately 7.0 points in the 4th grade, 17.0 points in the 8th grade, and 8.4 points in the 10th grade. (Figure 18)

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Figure 16: GCS Reading Comprehension Performance Levels by Ethnicity Grades 4, 8, and 10

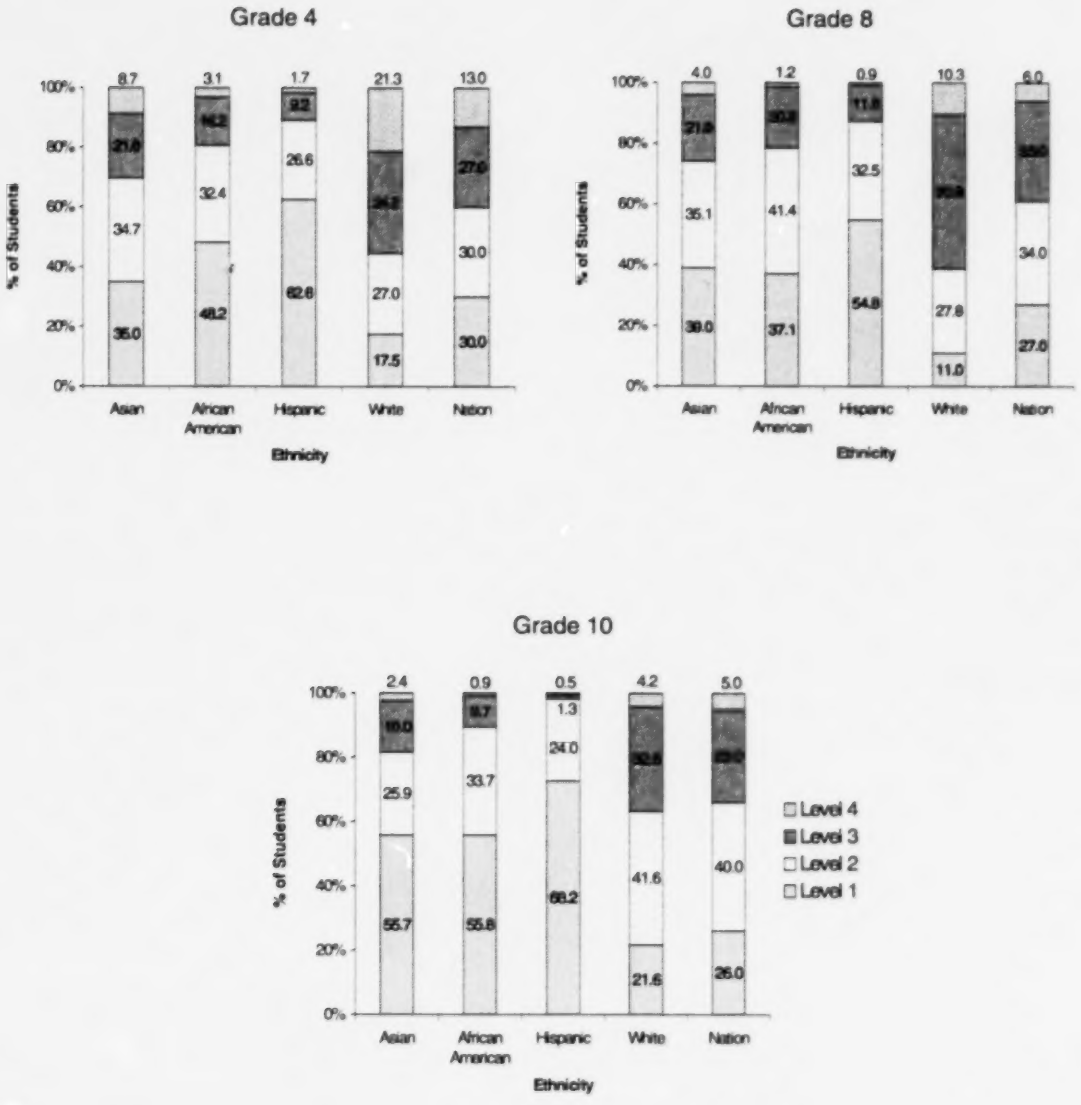

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Figure 17: GCS Total Math Performance Levels by Ethnicity Grades 4, 8, and 10

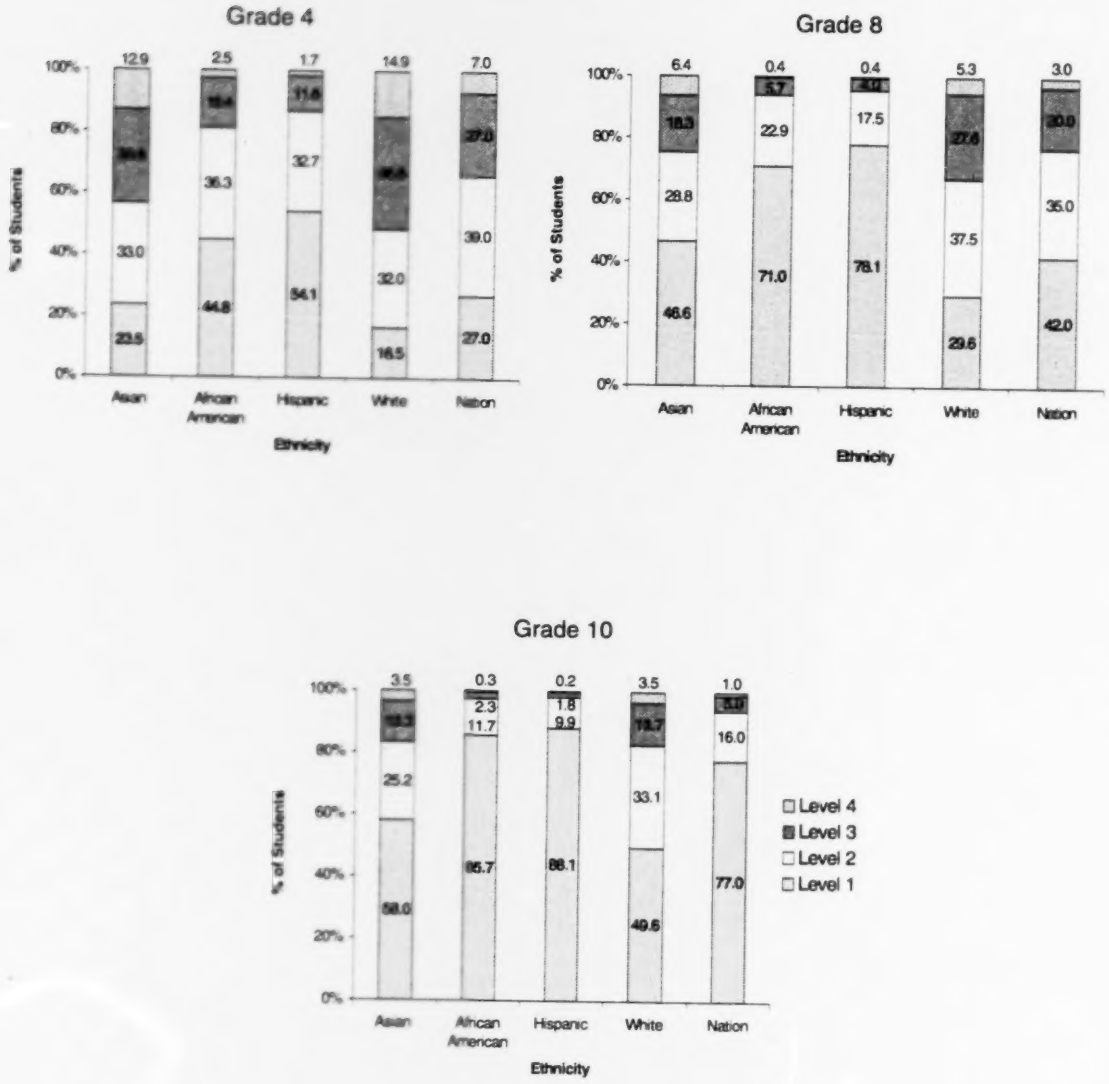

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Figure 18: Difference in Percentage Points between GCS Students Performing at or above the Basic Level (Performance Levels 2, 3, and 4) by Ethnicity Reading Comprehension and Total Math, Grades 4, 8, and 10

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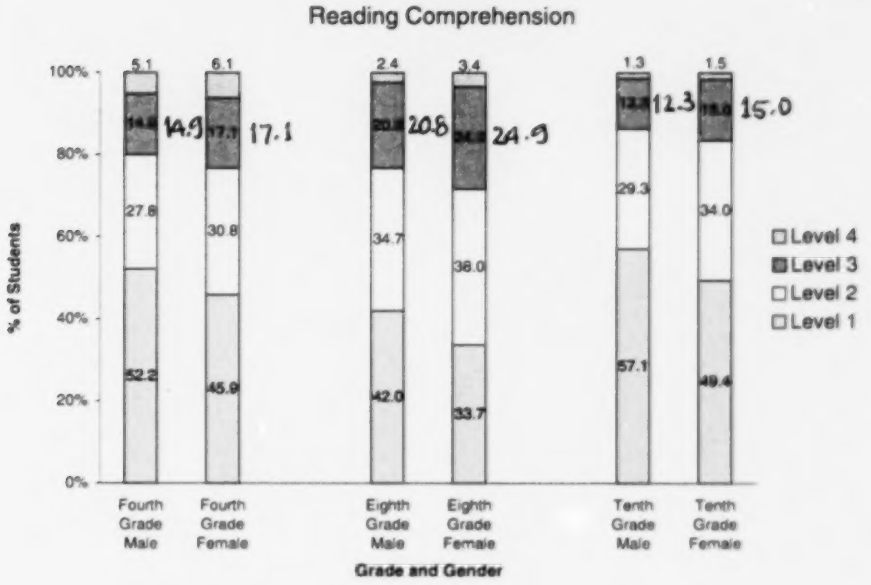
H. GCS Performance Levels by Gender and Ethnicity

- GCS Males were more likely to score below the basic level than females in Reading Comprehension. (Figure 19)
- GCS Males and females scored at similar levels in Total Math. (Figure 19)
- White males and females in grades 4, 8, and 10 were more likely to perform at or above the basic level in Reading Comprehension and Total Math than any other groups. (Figures 20 and 21)
- Hispanic males and females in grades 4, 8, and 10 were less likely to score at or above the basic level in Reading Comprehension and Total Math than any other groups. (Figures 20 and 21)
- African American females in grades 4, 8, and 10 outscored African American males in Reading Comprehension. (Figures 20 and 21)
- African American males in grades 4, 8, and 10 were as likely as African American females to score at or above the basic level in Total Math. (Figures 20 and 21)

Figure 19: GCS Performance Levels by Gender
Reading Comprehension and Total Math
Grades 4, 8, and 10



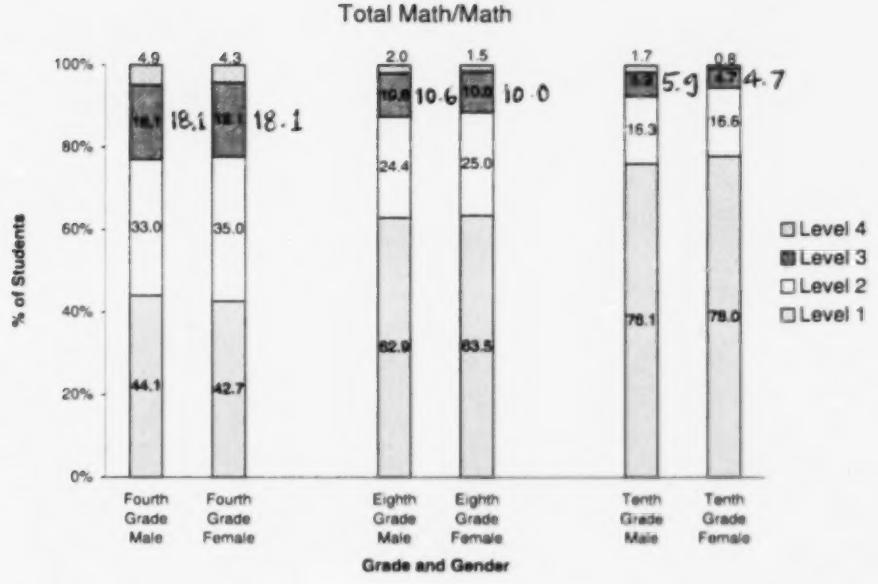


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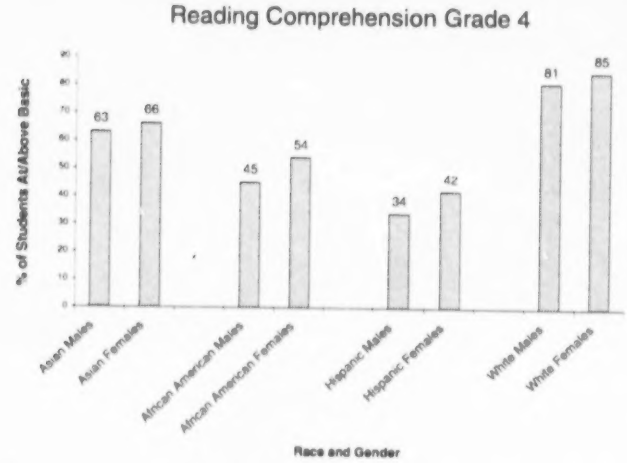
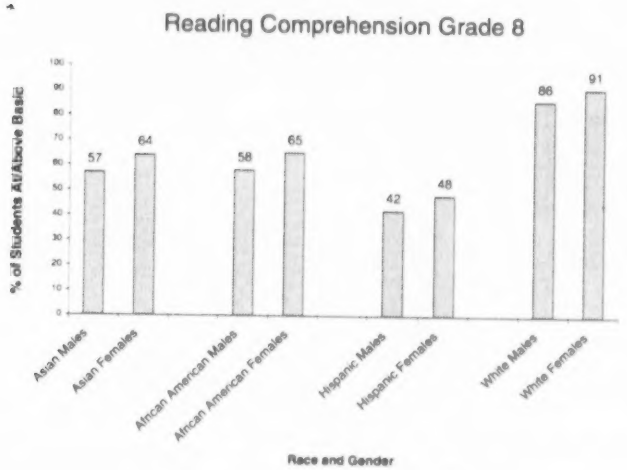
Figure 20: GCS Percent of Students Performing at or above the Basic Level by Ethnicity and Gender Reading Comprehension, Grades 4, 8, and 10





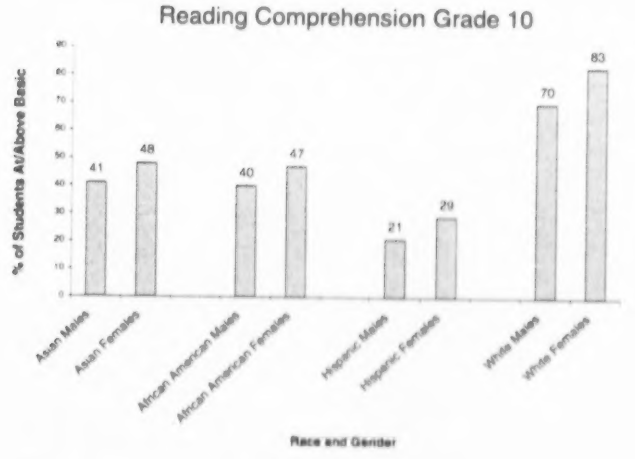
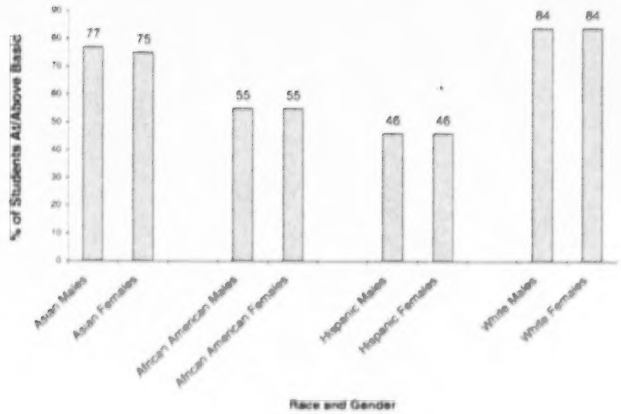
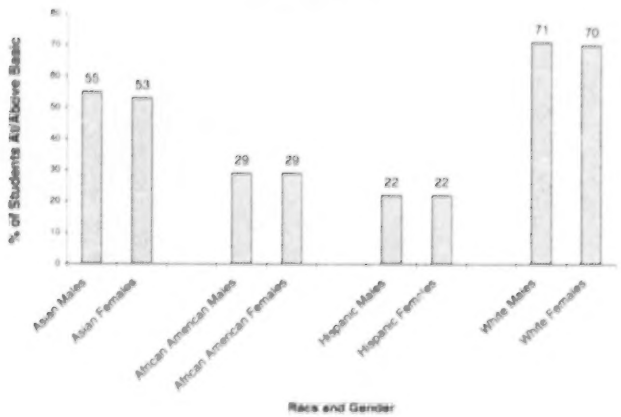


Figure 21: GCS Percent of Students Performing at or above the Basic Level by Ethnicity and Gender Total Math, Grades 4, 8, and 10

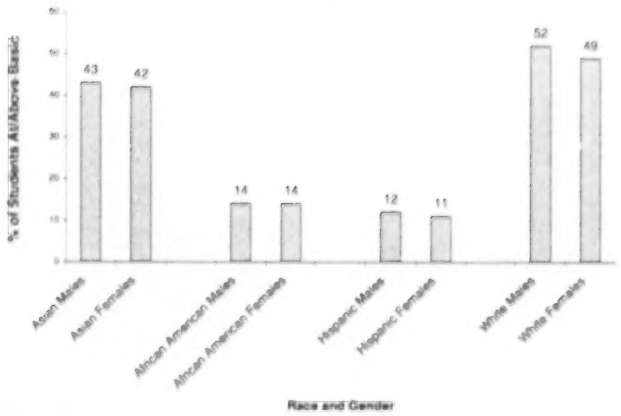
Total Math Grade 4



Total Math Grade 8



Total Math Grade 10



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I. GCS Performance Levels by District Poverty and Ethnicity

- Students in GCS districts with high concentrations of poverty were more likely to score below the basic level than students in districts with moderate concentrations of poverty. (Figure 22)

- The achievement gap in Reading Comprehension (at or above the basic level) between students in districts with moderate and high concentrations of poverty was 18.2 points in the 4th grade, 12.2 points in the 8th grade, and 17.0 points in the 10th grade. (Figure 23)

- The achievement gap in Total Math (at or above the basic level) between students in districts with moderate and high concentrations of poverty was 15.7 points in the 4th grade, 10.9 points in the 8th grade, and 11.0 points in the 10th grade. (Figure 23)

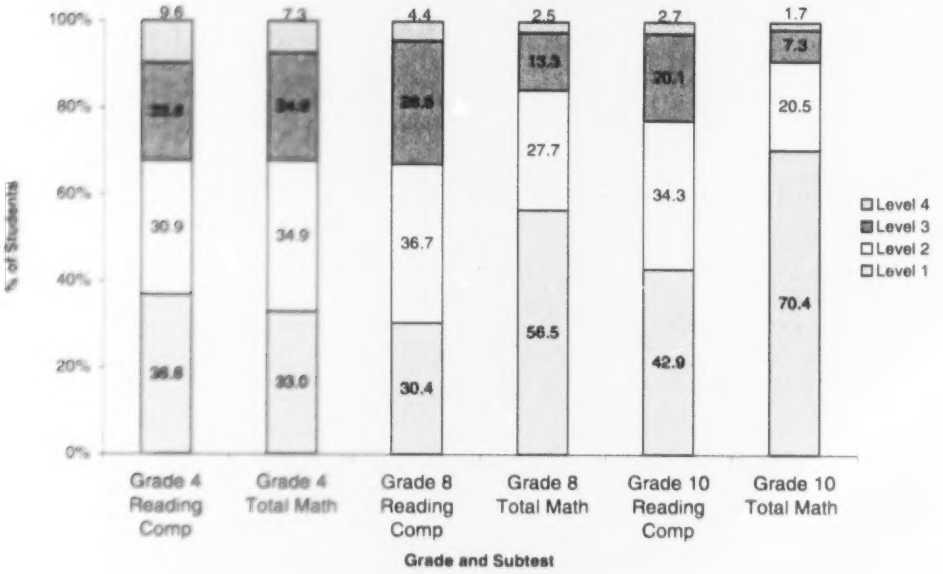
- The achievement gap between White and African American students in Reading Comprehension in the poorest GCS districts was 30.5 points in grade 4, 22.9 points in grade 8, and 32.1 points in grade 10; and the gap in Total Math was 29.8 points in grade 4, 36.7 points in grade 8, and 34.4 points in grade 10. (Figure 26)

- The achievement gap between White and Asian American students in Reading Comprehension in the poorest GCS districts was 20.7 points in grade 4, 28.6 points in grade 8, and 37.7 points in grade 10; and the gap in Total Math was 9.4 points in grade 4, 15.9 points in grade 8, and 10.7 points in grade 10. (Figure 27)

- The achievement gap between White and Hispanic students in Reading Comprehension in the poorest GCS districts was 47.7 points in grade 4, 51.4 points in grade 8, and 52.3 points in grade 10; and the gap in Total Math was 40.8 points in grade 4, 51.2 points in grade 8, and 39.9 points in grade 10. (Figure 28)

Figure 22: GCS Performance Levels by District Enrollment in Free Lunch Program Reading Comprehension and Total Math, Grades 4, 8, and 10

34-66% District Enrollment in Free Lunch Program



67-100% District Enrollment in Free Lunch Program

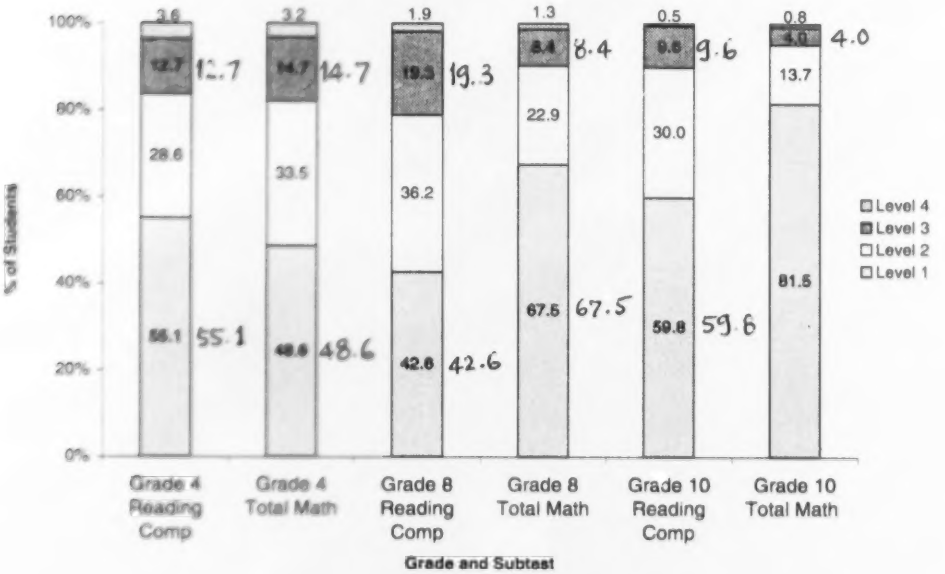


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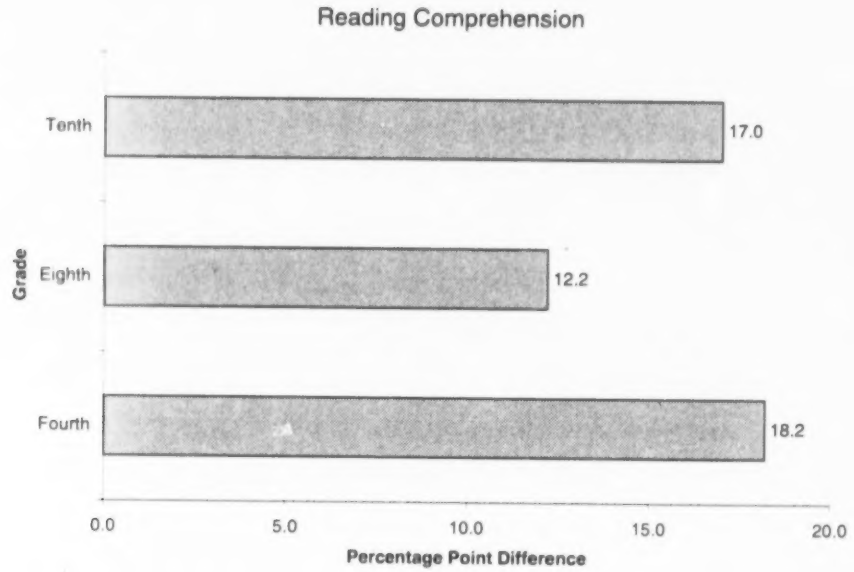
Figure 23: Difference in Percentage Points between GCS Students Performing at or above the Basic Level (Performance Levels 2, 3 and 4) by District Enrollment in Free Lunch Program Reading Comprehension and Total Math, Grades 4, 8, and 10 (34-67% Free Lunch Enrollment – 67-100% Free Lunch Enrollment)



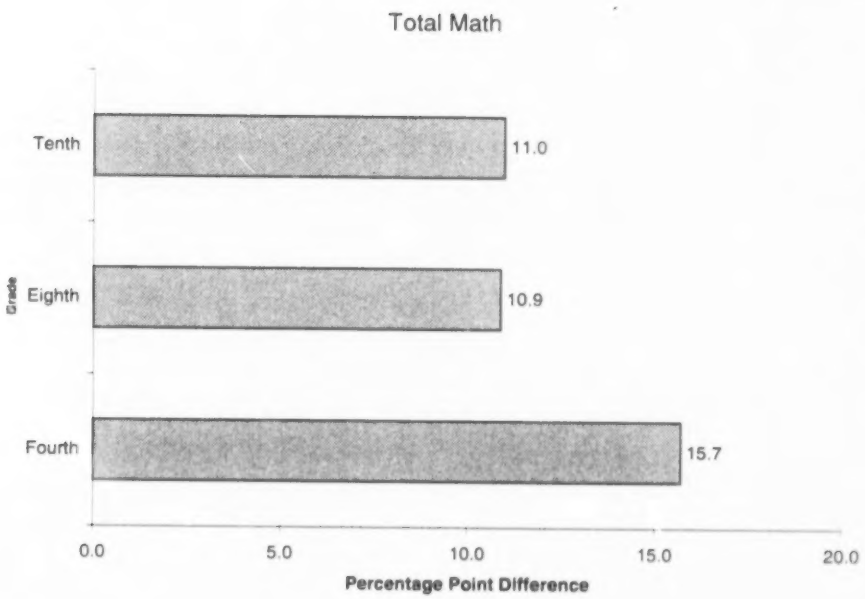
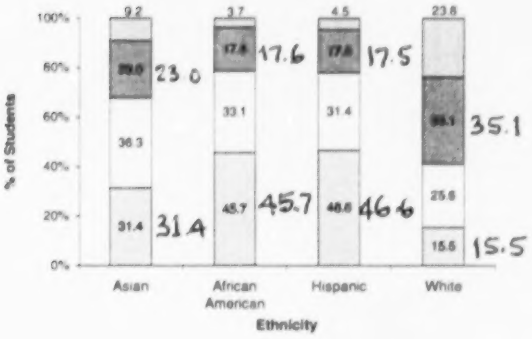
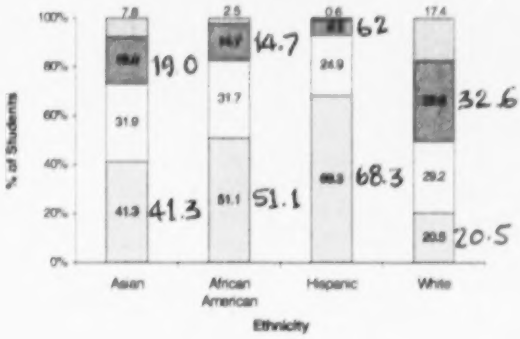


Figure 24: GCS Reading Comprehension Performance Levels by District Enrollment in Free Lunch Program and Ethnicity Grades 4, 8, and 10

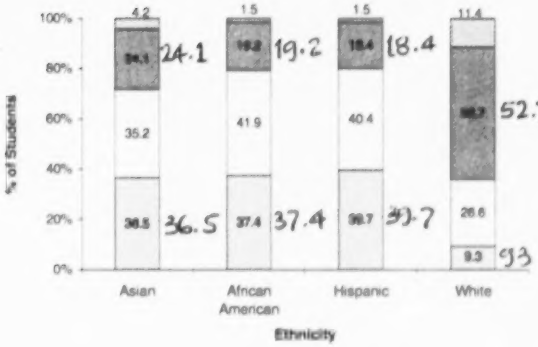
34-66% Free Lunch Grade 4



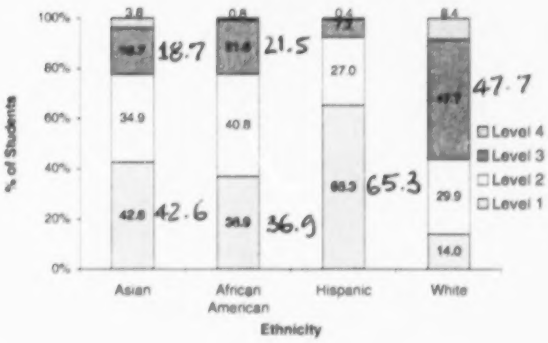
67-100% Free Lunch Grade 4



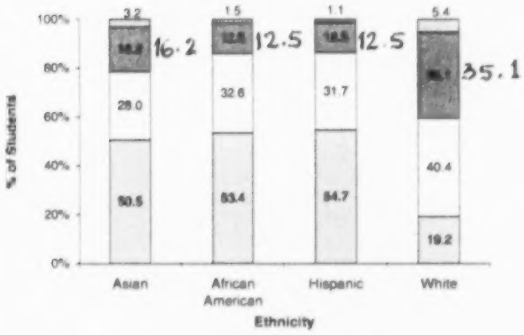
34-66% Free Lunch Grade 8



67-100% Free Lunch Grade 8



34-66% Free Lunch Grade 10



67-100% Free Lunch Grade 10

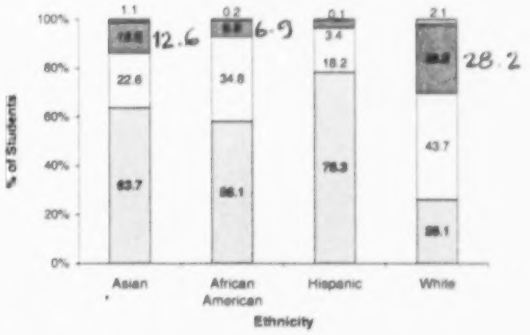


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Figure 25: GCS Total Math Performance Levels by District Enrollment in Free Lunch Program and Ethnicity Grades 4, 8, and 10

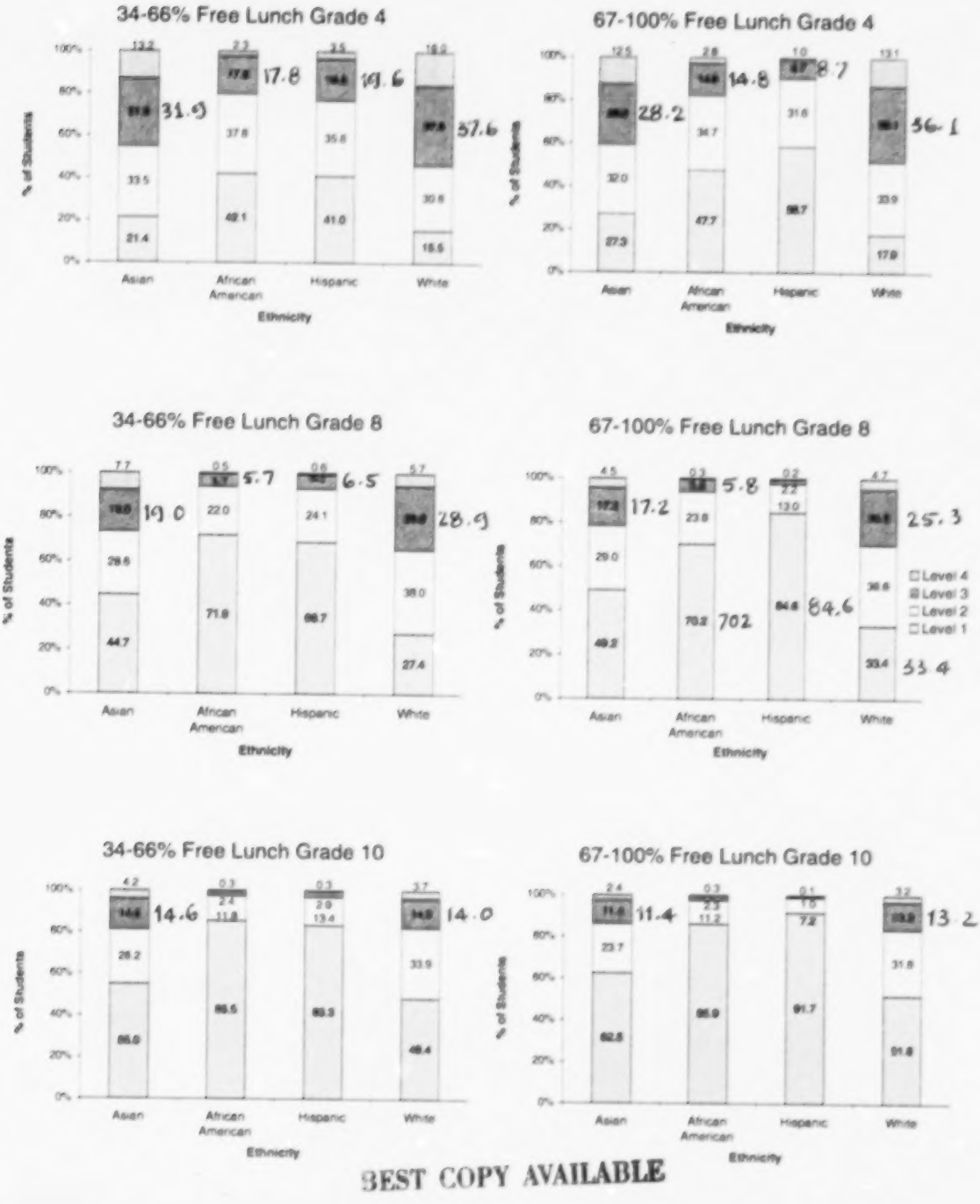

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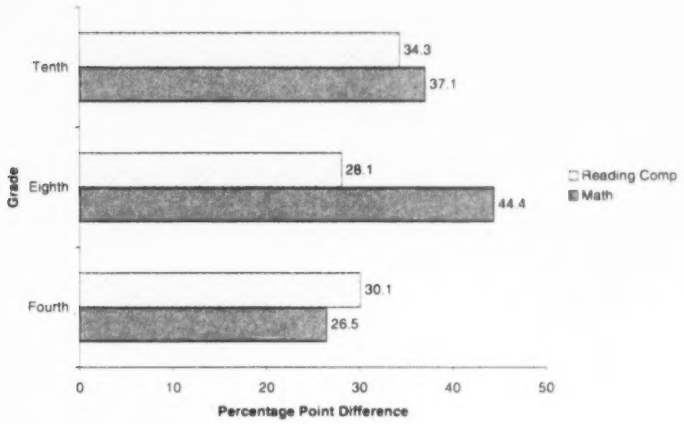
Figure 26: Percentage Point Difference between White and African American Students Performing at or above the Basic Level (Performance Levels 2, 3, and 4) by Percent of District Enrollment in Free Lunch Program Reading Comprehension and Total Math, Grades 4, 8, and 10 (White – African American)

34 – 66% District Enrollment in Free Lunch Program



67 – 100% District Enrollment in Free Lunch Program

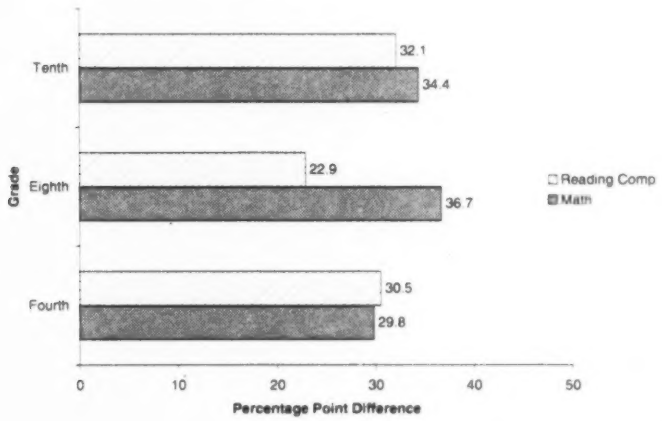


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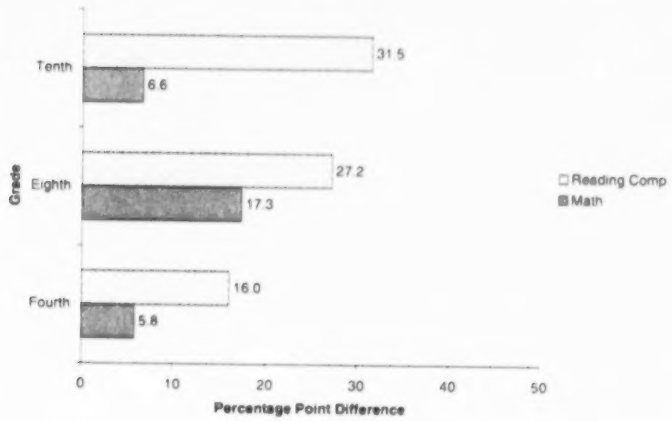
Figure 27: Percentage Point Difference between White and Asian Students Performing at or above the Basic Level (Performance Levels 2, 3, and 4) by Percent of District Enrollment in Free Lunch Program Reading Comprehension and Total Math, Grades 4, 8, and 10 (White – Asian)

34 – 66% District Enrollment in Free Lunch Program



67 – 100% District Enrollment in Free Lunch Program

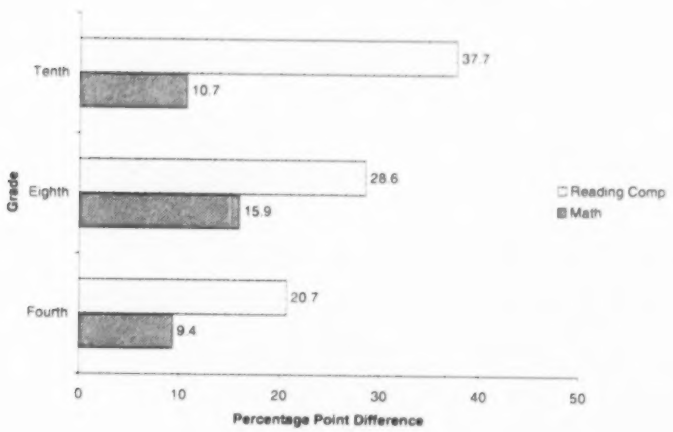
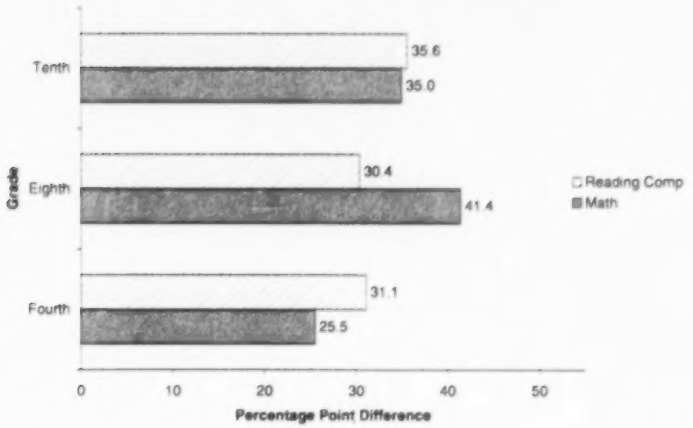
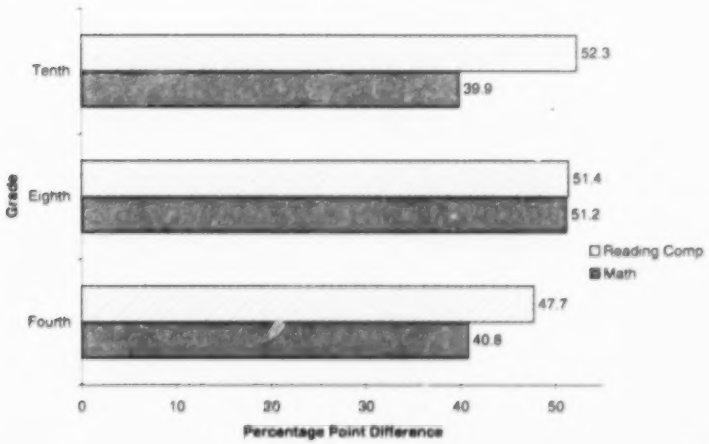


Figure 28: Percentage Point Difference between White and Hispanic Students Performing at or above the Basic Level (Performance Levels 2, 3, and 4) by Percent of District Enrollment in Free Lunch Program Reading Comprehension and Total Math, Grades 4, 8, and 10 (White – Hispanic)

34 – 66% District Enrollment in Free Lunch Program



67 – 100% District Enrollment in Free Lunch Program



Appendix A

Performance Levels for GCS and the Nation
All Subtests, Grades 2 – 11

Appendix A: Performance Levels for GCS and Nation
Grades 2–11

Total Reading, Reading Vocabulary, Reading Comprehension, and Language

GRADE	Performance Level	Total Reading		Reading Vocab.		Reading Comp.		Language	
		CGCS	Nation	CGCS	Nation	CGCS	Nation	CGCS	Nation
Second	Level 1	42	25	41	23	47	33	43	24
	Level 2	38	40	32	37	37	39	33	40
	Level 3	17	29	19	29	13	23	18	28
	Level 4	4	6	8	11	3	5	7	8
Third	Level 1	46	25	36	19	49	30	49	31
	Level 2	31	33	29	26	32	33	29	33
	Level 3	18	31	21	32	14	28	17	26
	Level 4	6	11	14	23	5	9	6	10
Fourth	Level 1	43	24	33	17	49	30	42	28
	Level 2	33	33	35	31	29	30	29	30
	Level 3	16	29	17	28	16	27	21	30
	Level 4	7	14	15	24	6	13	8	12
Fifth	Level 1	40	22	28	16	45	26	50	31
	Level 2	40	43	42	37	37	42	27	33
	Level 3	17	29	21	32	15	28	18	27
	Level 4	4	6	8	15	3	4	5	9
Sixth	Level 1	37	21	18	13	47	27	46	32
	Level 2	42	45	49	40	35	42	38	45
	Level 3	18	29	25	36	16	26	13	19
	Level 4	3	5	8	11	3	5	3	4
Seventh	Level 1	40	23	37	15	39	26	45	32
	Level 2	37	38	37	40	37	35	37	44
	Level 3	19	33	17	29	21	35	14	20
	Level 4	4	6	9	16	3	4	4	4
Eighth	Level 1	34	22	22	14	38	27	49	35
	Level 2	40	36	43	33	36	34	34	38
	Level 3	23	35	29	37	23	33	12	19
	Level 4	3	7	7	16	3	6	6	8
Ninth	Level 1	44	24	42	25	46	26	49	33
	Level 2	37	39	35	36	34	35	34	37
	Level 3	16	31	16	27	17	34	15	25
	Level 4	3	6	6	12	3	5	2	5
Tenth	Level 1	49	26	37	21	53	26	57	36
	Level 2	31	40	36	39	32	40	27	36
	Level 3	17	29	18	26	14	29	14	22
	Level 4	3	5	10	14	1	5	3	6
Eleventh	Level 1	48	36	32	23	57	43	54	50
	Level 2	34	40	37	41	28	34	29	30
	Level 3	15	20	20	26	12	19	14	16
	Level 4	3	4	11	10	3	4	4	4

Total Math, Problem Solving, Math Procedures, and Science

GRADE	Performance Level	Total Math		Problem Solving		Math Procedures		Science	
		CGCS	Nation	CGCS	Nation	CGCS	Nation	CGCS	Nation
Second	Level 1	31	23	32	21	31	26	n/a	n/a
	Level 2	40	43	37	40	36	40	n/a	n/a
	Level 3	23	28	25	33	17	18	n/a	n/a
	Level 4	5	6	5	6	16	16	n/a	n/a
Third	Level 1	35	25	38	26	31	24	34	21
	Level 2	42	43	38	38	43	42	42	36
	Level 3	18	25	20	30	17	20	19	32
	Level 4	4	7	5	6	10	14	5	11
Fourth	Level 1	43	27	40	25	50	34	39	20
	Level 2	34	39	34	37	27	32	42	38
	Level 3	18	27	21	31	15	21	15	32
	Level 4	5	7	5	7	9	13	4	10
Fifth	Level 1	52	37	44	30	55	41	43	20
	Level 2	29	35	34	37	26	30	35	36
	Level 3	15	23	18	28	11	16	18	33
	Level 4	4	5	4	5	8	13	4	11
Sixth	Level 1	55	43	51	41	61	44	35	22
	Level 2	27	33	28	33	21	28	35	33
	Level 3	13	19	15	20	12	19	23	32
	Level 4	4	5	5	6	6	9	7	13
Seventh	Level 1	67	48	65	47	68	49	43	27
	Level 2	22	33	23	33	18	25	37	39
	Level 3	9	16	9	17	10	21	14	23
	Level 4	2	3	3	3	3	5	6	11
Eighth	Level 1	63	42	61	41	66	43	49	37
	Level 2	25	35	25	37	22	29	34	35
	Level 3	10	20	10	17	10	22	13	21
	Level 4	2	3	3	5	2	6	5	7
Ninth	Level 1	62	44	54	n/a	66	n/a	56	33
	Level 2	27	39	30	n/a	22	n/a	33	40
	Level 3	9	16	14	n/a	10	n/a	9	21
	Level 4	2	1	3	n/a	1	n/a	3	6
Tenth	Level 1	77	61	n/a	n/a	n/a	n/a	65	44
	Level 2	16	28	n/a	n/a	n/a	n/a	28	41
	Level 3	5	10	n/a	n/a	n/a	n/a	6	13
	Level 4	1	1	n/a	n/a	n/a	n/a	2	2
Eleventh	Level 1	77	75	n/a	n/a	n/a	n/a	70	56
	Level 2	15	18	n/a	n/a	n/a	n/a	23	37
	Level 3	7	6	n/a	n/a	n/a	n/a	6	6
	Level 4	1	1	n/a	n/a	n/a	n/a	1	1

*n/a indicates instances where a subject and grade level were not tested.

Appendix B

Normal Curve Equivalents (NCEs)

Appendix B: Normal Curve Equivalent (NCEs)*

The normal curve equivalent (NCE) is a normalized standard score with a mean of 50 and a standard deviation of 21.06. This score most often is used to enable the test user to manipulate the test data mathematically. NCEs also are used to compute Stanford 9 Battery Total and multiple-choice/open ended Composite scores. Stanines and normal curve equivalents have a direct, fixed relationship to percentile ranks. This relationship is shown in the following table.

A Normal Distribution of Stanines, Percentile Ranks, Normal Curve Equivalents, and Performance Classifications*

Stanine	1	2	3	4	5	6	7	8	9
Percentile Rank	Below 4	4-10	11-22	23-39	40-59	60-76	77-88	89-95	Above 95
NCE	1.0-10.4	13.1-23.0	24.2-33.7	34.4-44.1	44.7-54.8	55.3-64.9	65.6-74.7	75.8-84.6	86.9-99.0
	Below Average			**Average**			**Above Average**		

* Source: Harcourt Brace Educational Measurement, SAT-9 Technical Data Report, 1997.

Appendix C

Performance Levels

Appendix C: Performance Levels

Performance Standards are criterion-referenced scores obtained through a Standard Setting procedure. A Performance Standard represents a level of mastery based upon the judgement of teachers, and provides information about what students should know and be able to do. Four levels of Performance Standards are available for Stanford 9:

Level 4 – Advanced, signifies *superior performance* beyond grade level mastery. At the high school levels, students achieving this level show readiness for advanced academic courses, advanced technical training, or career-oriented employment.

Level 3 – Proficient, represents *solid academic performance*, indicating that students are prepared for the next grade. At high school, this level reflects competency in a body of subject-matter knowledge and skills that prepares students for responsible adulthood and productive work.

Level 2 – Basic, denotes *partial mastery* of the knowledge and skills that are fundamental for satisfactory work. At the high school level, this is higher than minimum competency skills in a subject area.

Level 1 – Below Basic, indicates *less than partial mastery* of a subject area.

Appendix D

CGCS Districts Tested

Appendix D: CGCS Districts Tested

The data in this report include 1998-1999 SAT-9 scores from the following 16 Great City School Districts:

Birmingham Public Schools
District of Columbia Public Schools
Fort Worth Independent School District
Fresno Unified School District
Houston Independent School District
Long Beach Unified School District
Los Angeles Unified School District
Norfolk Public Schools
Oakland Unified School District
School District of Philadelphia
Richmond Public Schools
Sacramento City Unified School District
San Diego Unified School District
San Francisco Unified School District
St. Louis Public Schools
Tucson Unified School District

Only 12 of the 16 CGCS districts tested students in Reading Comprehension and Total Math at grades 4, 8, and 10. The following table displays the number of CGCS test-takers by district in Reading Comprehension and Total Math at grades 4, 8, and 10.

Name of District	Grade Four		Grade Eight		Grade Ten	
	Reading Comp	Total Math	Reading Comp	Total Math	Reading Comp	Math
Birmingham	2,753	2,754	2,356	2,356	2,102	2,103
District of Columbia	5,287	5,263	3,814	3,767	3,190	3,201
Fresno	2,883	2,883	3,624	3,624	2,985	2,985
Houston	10,691	10,680	10,620	10,578	8,042	8,033
Long Beach	5,368	5,368	4,038	4,038	3,257	3,257
Los Angeles	38,069	38,069	22,155	22,155	16,898	16,898
Oakland	2,221	2,221	1,357	1,357	1,283	1,283
Philadelphia	13,924	13,868	11,843	11,718	10,611	10,577
Sacramento	2,707	2,707	1,832	1,832	1,302	1,302
San Diego	3,476	3,476	4,012	4,012	3,706	3,706
San Francisco	2,277	2,277	1,266	1,266	948	948
Tucson	4,649	4,664	4,863	4,746	4,723	4,703
TOTAL	**94,305**	**94,230**	**71,785**	**71,449**	**59,047**	**58,996**

About the Organizations

The Council of the Great City Schools is the only independent organization in the nation whose sole purpose is improving urban public education. Composed of 56 of the nation's largest city public school districts, the Council promotes urban education and is an advocate for urban students through legislation, research, and media relations. The organization also provides forums for school districts to share common problems and solutions, exchange information, and address new challenges.

Harcourt Educational Measurement is one of the nation's largest for-profit test publishing companies. Harcourt Educational Measurement tests over 12 million K-12 students annually with standardized, nationally norm-referenced tests, such as the *Stanford 9* and the *MAT 7*. The company partners with over 40 states and/or local school districts to develop and implement customized testing programs, which assess student performance based on state, local, and/or national standards.

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